THE UNIVERSITY OF ALBERTA

HISTORICAL FOUNDATIONS OF MEASUREMENT WITHIN GUIDANCE IN CANADIAN EDUCATION

BY

© WILLIAM ALFRED BORGEN

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF MASTER OF EDUCATION

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

EDMONTON, ALBERTA

FALL, 1971

UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "Historical Foundations of Measurement within Guidance in Canadian Education" submitted by William A. Borgen in partial fulfillment of the requirements for the degree of Master of Education.

September 10, 1971
Date

ABSTRACT

The major objective of this historical thesis was to describe some of the foundations of measurement within guidance in Canadian education. In order to achieve this objective, the author selected two general themes for examination:

a) the historical origins of the concept of measurement within the context of guidance in education, and

b) the evolution of attitudes concerning the role of measurement within the context of guidance.

In dealing with the first theme, the author described developments which occurred in Europe and the United States during the late 1800's and early 1900's. These developments include: attempts to measure individual differences in intelligence by Galton, Wundt, Cattell, and Binet; refinements of measures of intelligence by Goddard and Terman; the use of standardized measurement procedures within the context of education; and the use of psychological tests within the context of guidance. These events were of relevance to the study in that they represent some of the earliest developments which facilitated the use of psychological tests within a guidance framework, and in that they directly influenced later developments in Canada.

Canadian events included in the description of the evolution of attitudes towards measurement within guidance date from the turn of the century to the 1940's. Psychological tests were used initially in Canada to investigate problems occurring within education generally. Later, writings by Sandiford and others suggested a role for tests within

the context of vocational guidance. By the 1940's this context had been expanded by educators such as Beattie and Laycock to include activities more directly related to personal guidance. At the time when provinces were creating formal guidance departments, psychological testing was being described as one of several techniques useful within the broadened guidance function.

The study is concluded with a discussion of five issues currently important to psychological testing within guidance. Two of the themes are the emphasis on guidance in elementary schools and the renaissance in vocational guidance. Current concern in the first area indicates a growing interest in personal guidance, while the large number of writings regarding the second area reflect occupational changes which have necessitated increased efforts to facilitate vocational adjustment. The other three issues reflect current interests in society generally. Articles concerning specialization, use of computers, and accountability of procedures are numerous in most professional journals.

ACKNOWLEDGEMENTS

The writer wishes to express his appreciation to his supervisor, Dr. H.W. Zingle, and to members of his committee, Dr. M.R. Lupul, Dr. V.R. Nyberg, and Dr. A. Shysh, for their interest and constructive suggestions.

The encouragement and assistance offered by Dr. F. Van Hesteren during the planning and writing of the thesis was also appreciated.

The author also wishes to thank his wife for her encouragement, and for her assistance in proofreading the thesis.

TABLE OF CONTENTS

Chapter 1

INTRODUCTION TO THE STUDY

The purpose of this chapter is to outline the scope of the study, to supply reasons for attempting this type of study, and to provide some basic definitions and fundamental assumptions as a frame of reference for the thesis.

SCOPE OF THE STUDY

The study is intended to meet two general objectives:

(a) to trace the historical origins of the concept of measurement within the context of guidance in education, and

(b) to examine the evolution of attitudes concerning the role of measurement within the context of guidance.

To fulfill the first objective, the author examined influences which seem pertinent to the inclusion of guidance within the context of education, and measurement within the context of guidance. To fulfill the second objective, the author studied Canadian developments dating from the turn of the century to the 1940's, when most provinces were forming formal guidance departments.

In chapter four of the study the attitudes prevalent during the 1940's are contrasted with those which seem to be popular currently.

SOURCES OF INFORMATION

Information regarding the origins of the concept of measurement within guidance was obtained from several books describing European and

American developments. For information on Canadian historical events, the author used A Bibliography of Canadian Education as a basic source. Many of the articles listed in this bibliography were obtained through the Interlibrary Loan Service of the University of Alberta. Data regarding recent Canadian developments were obtained from current Canadian books and periodicals.

Several sources were consulted regarding acceptable procedures in conducting and writing historical studies. A Guide to Historical Method by R.J. Shafer was used as a basic guide in the collection and arrangement of material for this study.

NEED FOR THE STUDY

In 1925 Peterson wrote: "For an adequate understanding of modern tests and their purpose, some knowledge of their evolution is necessary . . . ."[1] To the extent that this statement is true for tests, it should also be true for testing within the context of guidance. There are several publications outlining the development of psychological tests. Fewer deal with the evolution of guidance. To the author's knowledge, there are no publications which focus on the evolution of testing within guidance in Canada.

Downing has noted that there is a pressing need for evaluation of current approaches to guidance.[2] Since psychological tests form a

---

[1]Joseph Peterson, Early Conceptions and Tests of Intelligence (New York: World Book Company, 1925), p. ii.

[2]Lester N. Downing, Guidance and Counseling Services: An Introduction (New York: McGraw-Hill, Inc., 1968), p. 358.

part of some of these approaches, it would seem to follow that evaluation in the area of testing is also needed. From Peterson's point of view, an historical study may help to provide a partial basis for such an evaluation.

DEFINITIONS AND ASSUMPTIONS CONCERNING GUIDANCE

Prior to an examination of influences foundational to the development of measurement within guidance, it would seem necessary to provide a description of the term "guidance."

Several authors have suggested models for guidance. The one most appropriate for this study should represent those models which are most popular, and be sufficiently general to be meaningful in all parts of the study.

A widely accepted model was originally presented by Koos and Kefauver in 1932:

> There are two main phases of the concept of guidance . . . . These are (1) the distributive, and (2) the adjustive phases. In discharging the former phase we aim to (1) distribute youth as effectively as possible to educational and vocational opportunities, that is, to subjects (or courses), curricula, extracurricular activities (which may be thought of as expansions of the curriculum), schools, higher institutions, and vocations. In the second we (2) help the individual to make optimal adjustment to educational and vocational situations . . . . The two phases of distribution and adjustment are complementary. Also, they bear reciprocal relationships to each other as when a recommended change of subjects in a student's program dispels a maladjustment, or when stimulation of a student to better performance (through adjustive efforts of guidance workers) in a particular subject field removes an obstacle to the student's admission to a particular curriculum.[3]

Koos and Kefauver reflect a trend in the 1930's to place emphasis on

---

[3]Leonard V. Koos and Grayson N. Kefauver, Guidance in Secondary Schools (New York: The Macmillan Company, 1932), p. 15.

vocational distribution and adjustment, but also make favorable comments with respect to "expansion which extends it [guidance] to include distribution and adjustment of students to the full scope of life activity inclusive of vocational, recreational, health, and civic-social-moral relationships."[4]

The model would seem to satisfy the previously mentioned condition of generality. The advisability of choosing it was also increased by the fact that several other authors have either used it as a basis for their discussions or have at least mentioned it favorably. Three of these are Traxler (1945), Hutson (1958), and Zaccaria (1969).

Hutson represents the Koos and Kefauver model in the following diagram:

GUIDANCE distributive and adjustive services	which facilitate DEVELOPMENT[5]

He clarifies this general description by explaining terms and outlining some activities appropriate and inappropriate to distributive and adjustive services. Activities not suitable within the guidance function as defined by Hutson are the following:

(1) Student personnel work of which guidance is a subset: The former includes activities such as administration of a record system of attendance, etc., and of operation of

---

[4] Ibid., p. 19.

[5] Percival W. Hutson, The Guidance Function in Education (New York: Appleton-Century-Crofts, Inc., 1958), p. 16.

health services, which are extraneous to guidance.

(2) Individualized education: The recognition of individual differences and use of information with respect to an individual is essential. This information can also be used to aid instruction in academic subjects. Such use is not considered to be a part of guidance.

(3) The whole of education: Hutson disagrees with Brewer (1932) who suggested that guidance and education are synonymous. Hutson suggests that there exists a guidance of learning which is an appropriate goal of classroom activity. His position is that the inclusion of this facet within the guidance model renders the concept so broad as to make it meaningless to define in terms of anything so concrete as specific activities.[6]

The model is explained more fully using several activities appropriate to the two general services described by Hutson. The following activities are considered relevant in the distributive services:

(1) to acquaint the student with educational and vocational opportunities,

(2) to acquaint the student with his powers, interests, and limitations,

(3) to acquaint the school with the student's powers, interests, and limitations,

---

[6]Ibid., p. 18.

(4) to keep the school fully and continuously acquainted with educational and vocational opportunities, and

(5) to help the child in times of selection and decision.[7]

Activities considered relevant for adjustive services are the following:

(1) to prevent maladjustment,

(2) to identify cases of maladjustment of various types and to identify them in their incipiency if possible,

(3) to diagnose cases of maladjustment, and

(4) to decide upon remedial treatment, administer it, and follow it through.[8]

The Koos and Kefauver model, as modified by Hutson, is the one which has been adopted for this thesis.

DEFINITIONS AND ASSUMPTIONS CONCERNING MEASUREMENT

In this study measurement is defined as an activity or process capable of obtaining an objective and standardized assessment of a sample of behavior[9] to detect "differences between individuals or between the reactions of the same individual on different occasions."[10] The instrument used to obtain the sample of behavior is defined as a

---

[7]Ibid., pp. 151-156.

[8]Ibid.

[9]Anne Anastasi, Psychological Testing (New York: The Macmillan Company, 1968), p. 21.

[10]Ibid., p. 3.

psychological test.

Some assumptions which are important to the understanding of the concept of measurement are given by Anastasi (1968) and by Thorndike and Hagen (1965).

Thorndike and Hagen note that throughout a child's educational life several decisions are made for and by him. Their basic assumption is that "sound decisions arise out of relevant knowledge."[11] The general function of measurement is to supply a portion of this relevant knowledge.

The accuracy of the knowledge which measurement techniques can supply is governed by how wisely the factors postulated to influence a behavior have been chosen, and by how accurately these factors have been described and understood.

The applicability of the knowledge obtained is also a factor. In Anastasi's view "the diagnostic and predictive value of a psychological test depends on the degree to which it serves as an indicator of a relatively broad and significant area of behavior."[12]

Refinements in the accuracy and applicability of measurement activities are necessary. Some behaviors which are to be sampled seem, by their very nature, to be difficult to measure. For example, there is much disagreement as to what behaviors are indicators of intelligence

---

[11]Robert L. Thorndike and Elizabeth Hagen, Measurement and Evaluation in Psychology and Education (New York: John Wiley and Sons, Inc., 1965), p. 8.

[12]Anastasi, p. 22.

or of creativity. The nature of the behavior observed may also govern the type of scale which can be applied. At the crudest level the scale may simply consist of a two-category classification. At the most refined level behaviors can be expressed in quantitative statements of amount.[13]

MEASUREMENT WITHIN THE CONTEXT OF GUIDANCE

Measurement, as defined in this study, subject to the conditions and limitations cited, is an appropriate activity within the context of the guidance model to the extent that it is an aid in carrying out the objectives of the distributive and adjustive services.

Distributive services: One method of acquainting the pupil and the school with the pupil's powers, interests, and limitations could be through standardized tests of intelligence, interest, and aptitude. Using the information obtained as a partial basis, a guidance worker may be of some assistance to the student in times of selection and decision. Tests may be especially pertinent in supplying knowledge in the area of vocational interest due to the amount and complexity of information needed to assist a person in making a decision in this area.

Adjustive services: Measurement activities could be of use in citing cases of maladjustment in either early or advanced stages, especially in larger educational institutions where individual attention is often lacking. Also, if the test is able to suggest the type of maladjustment, it could be used as a partial starting point in

---

[13] Thorndike and Hagen, pp. 10-11.

considering remedial action.

Thorndike suggests that problems have arisen historically most often when the application of measurement techniques has been made with insufficient regard to the fact that they are only able to supply information, the usefulness of which depends upon the nature of the tests used and their applicability to the situation. The techniques do not supply an interpretation of the information which they provide.[14]

In the opinion of the author the current status of measurement within guidance is in many ways a reflection of early developments in testing. The next chapter will consider some of these developments, first within the context of education, and then within the context of guidance.

---

[14] Ibid., p. 13.

Chapter 2

DEVELOPMENTS FOUNDATIONAL TO THE ACCEPTANCE OF TESTING

A major problem encountered in conducting an historical study involves deciding which material is relevant. A further difficulty entails the classification of events included in the chosen material according to directness of influence. Distinctions must be made between happenings which directly affect later events and those which seem parallel to or less directly facilitative of other developments.

Men and events ultimately included within this study were chosen by the author according to their perceived importance in the history of psychological testing.

Having noted some of the factors that could influence the selection of material for the study, the author proceeded to investigate the extent to which:

a) work in the United States was facilitated by Europeans like Galton, Wundt, and Binet,

b) developments in Canada were influenced by events in Europe and the United States, and

c) the use of psychological tests within the context of a defined guidance function was preceded by their use in education generally.

EARLY DEVELOPMENTS IN EUROPE AND THE UNITED STATES

It would seem logical to begin with a discussion of influences in Europe and America which appear to have led to

the development of psychological tests for use in education in the United States.

Francis Galton

Francis Galton has been described as "the founder of individual psychology"[1] and as "the father of mental testing."[2]

A cousin of Charles Darwin, Galton became interested in the study of the inheritance of genius. Two of his books, Hereditary Genius (1869) and Inquiries into Human Faculty Development (1883), reflect his concern with individual differences in mental inheritance and illustrate a method of quantifying these differences. The second book is considered by many to be the beginning of scientific individual psychology and mental tests.[3]

Goodenough (1949) summarized Galton's position with respect to measurement as follows:

> Galton was the first man to see clearly that the only way of reducing the mass of chaotic impressions from observations of human beings to systematic order is through a quantitative approach . . . . His imagination was captured by the fact that a given measurement can be expressed quantitatively, not only in terms of its own units of measurement, but also in terms of the frequency with which it may be expected to occur within a given population . . . . He realized the

---

[1]Kathryn W. Linden and James D. Linden, Modern Mental Measurement: A Historical Perspective (Boston: Houghton Mifflin Company, 1968), p. 6.

[2]Florence L. Goodenough, Mental Testing (New York: Rinehart and Company, Inc., 1949), p. 40.

[3]Edwin G. Boring, A History of Experimental Psychology (New York: The Century Company, 1929), p. 473.

vast importance of this principle for the treatment of biological and psychological data.[4]

Galton's early work involved analysing data from aristocrats, professional men, and university personnel, using statistical principles of probability which had been developed by Karl Gauss and Pierre Laplace, and the normal curve which had been formulated by Quetelet in 1846. Quetelet found that the frequencies of certain measures approximated the normal curve, but he assumed that variations from the mean constituted departures from nature's ideal. Galton applied the probability curve to human measures but disagreed with the idea that the mean represented the ideal. As a result of these early studies, Galton concluded that there is an hereditary component in intelligence and that "a better race of human beings could be developed by carefully selecting those who are best fitted to receive an education and to become parents."[5]

To test his hypothesis, Galton set out to develop criteria to differentiate among individuals. He set up a laboratory in which a series of measurements were made on several hundred subjects. As a result of the observations made, Galton concluded that tests of sensory capacity could be used to identify individual differences in intelligence.

He also thought there might be significance in individual differences in height, both standing and sitting; weight; arm span; force of blow; breathing power; reaction time; color sense; visual

---

[4]Goodenough, p. 25.

[5]John M. Reisman, The Development of Clinical Psychology (New York: Appleton-Century-Crofts, 1966), p. 27.

and auditory acuity; and strength to pull a weight and squeeze a spring.[6]

One method of data analysis which originated with Galton and which has had widespread implications in the area of measurement is the concept of statistical correlation. The principles of correlation which he applied in his early studies were given a theoretical basis by Carl Pearson. Boring (1929) notes that Pearson and Galton "established statistical investigation of psychological problems as one of the fundamental methods . . . ."[7]

Galton's major contributions would seem to lie in two areas:

a) recognition of individual differences as being more than errors in measurement or departures from nature's ideal, and

b) application of methods of measurement of these differences using sensory motor tests in a way that differed from methods used in other countries such as Germany.

Wilhelm Wundt

The contribution of German psychologists to the development of mental tests is well summarized by Sandiford (1938):

> In Germany, we cannot overlook Wundt's establishment of the first psychological laboratory in Leipzig in 1879 and all that it has meant to experimental psychology. His experiments dealt too exclusively with the simpler reactions and thought processes to work well as intelligence tests, but the influence of his laboratory spread to every corner of the civilized world. Stern and Bobertag gave us the intelligence quotient (I.Q.) which was adopted by Terman when he standardized the Binet tests for America, and

---

[6] Ibid., p. 28.

[7] Boring, p. 471.

> immediately became popular. Ebbinghaus, who is chiefly known to psychologists for his work on memory, should also be gratefully remembered for his completion test, a form of test which is still widely used, both in intelligence and achievement testing.[8]

The above quotation would indicate a large contribution to testing from Germany. However, it would seem obvious upon surveying the literature that Wundt had the greatest influence in establishing an attitude of scientific inquiry with respect to psychological investigations. In 1879 he founded the first psychological laboratory that was officially recognized as such by a university administration. This laboratory in Leipzig attracted several people who were later to be very important in the development of mental measurement. Among those from the United States who worked with Wundt were J. Cattell, G.S. Hall, and L. Witmer.

> The work of the Leipzig laboratory essentially was aimed toward the formulation of generalized descriptions of human behavior. Uniformities rather than differences in behavior were the focus of attention. The fact that one individual reacted differently from another when observed under identical conditions was regarded as error or "the personal equation."[9]

The significance of Wundt's work lies perhaps more in the methods he employed than in his specific findings. He helped to bring about:

> . . . the dawn of the era of scientific observation and experiment, as psychology cast off the leading strings by which it had been bound to its parent, philosophy, and began to step forward along a path of its own choosing . . . .[10]

---

[8]Peter Sandiford, Foundations of Educational Psychology (New York: Longmans, Green and Company, 1938), p. 358.

[9]Linden and Linden, p. 6.

[10]Goodenough, p. 22.

Although Wundt concentrated on similarities, his experiments, no matter how controlled, could not eliminate individual differences. This is seen by several authors as a step towards encouraging measurement of these differences. Goodenough (1949) noted the following: "Not Binet only, nor Binet and Cattell, but Wundt himself, though all unknowingly, must be regarded as one of the progenitors of mental testing."[11]

James McKeen Cattell

Although much necessary ground work in testing was done in Europe, it was in the United States that measurement found its widest application:

> Then, as now, American psychologists were particularly attracted by the idea of testing. Psychology in America has always leaned strongly to the practical side, and, . . . educational and social progress in the nineties pointed to the need for some more adequate method of appraising individual mental ability.[12]

Credit for establishing the foundations of mental measurement in the United States is generally given to James McKeen Cattell. Boring (1929) agrees, but suggests the following qualification:

> It would be easy to say that this man of pronounced ideas and fearless aggression did more than any one other to make American psychology what it is; however, Cattell might not have seemed so effective had he been a voice in the wilderness, like Titchener, instead of an able representative of the American trend. Leaders make the times, but the times also make the leaders.[13]

---

[11] Ibid., p. 31.

[12] Ibid., p. 41.

[13] Boring, pp. 519-20.

Cattell was associated for a time with both Wundt and Galton. He first went abroad in 1880 to study in Germany where he seemed to be impressed by the German interest in human capacities and attitude towards precision. In 1883 Cattell returned to Germany to study further under Wundt at Leipzig, who was attempting to formulate laws to explain and predict general human behavior.

At that time there was a great deal of interest in the study of reaction time as a tool of mental measurement. In his doctoral thesis, Cattell combined his interest in reaction time with an interest in individual differences. By 1886 he had published several articles in both fields.

Cattell returned to the United States to lecture for a year at the University of Pennsylvania before going to Cambridge University. While in England he came into contact with Galton. Both were interested in individual differences, but they had developed their approaches to the problem independently within a climate favorable to Darwin's evolutionary theory:

> From associating with Galton and his young and brilliant colleagues such as Carl Pearson and Charles Spearman, Cattell became familiar both with the rudimentary kinds of mental tasks which Galton had been working with and with the new statistical techniques that had been applied to the measures of these mental tasks.[14]

In 1890 Cattell introduced the term "mental tests" in an article in which he insisted that psychology must be based on a foundation of measurement and experimentation. Mental tests could be used to discover

---

[14]Linden and Linden, p. 9.

the consistency of mental processes, their interdependence, and their variation under different circumstances. He predicted future use in the selection of people for training and in the diagnosing of disease. However, his immediate concern was to build a battery of tests which could be used in a standardized manner. In the article he suggested the following as measures of intelligence:

> Dynamometer Pressure; Rate of Movement (speed to move an arm a specified distance); Sensation Areas (two-point discrimination); Least Noticeable Differences in Weight; Reaction-Time for Sound; Time for Naming Colors; Bisection of a 50 cm. line; Judgement of Ten Seconds Time; Number of Letters Remembered at One Hearing.[15]

These tests were used by Cattell at the University of Pennsylvania where he had established a psychological laboratory.

In 1891 he moved to Columbia, and founded a new laboratory. There he initiated the first study concerned with the prediction of academic success by collecting data from freshmen in 1893. "His plan was to store these data until his freshmen subjects had become seniors and then to correlate the predictor measure with the criterion measure of grade point average."[16] The results were completed by Wissler in 1901. They indicated that correlations of the psychological measures employed by Cattell with later measures of school achievement were nil.

Cattell's contribution to the area of psychological testing lies perhaps in what he was able to do in terms of the measurement of individual differences as well as in what he was unable to do in

---

[15]Reisman, pp. 29-30.

[16]Linden and Linden, p. 11.

relating his particular measures to intelligence.

Even in 1890 questions concerning the measures he had devised were being raised. Galton did not approve of them, stressing the importance of testing the validity of the measures. Cattell, however, maintained his point of view, and in 1896 he and others stated disagreement with the approach of Binet, Henri Beaunis and Hugo Munsterburg on the grounds that complex processes are difficult to measure. He favored simpler measures with greater reliability as indicators of attributes to be measured, irrespective of their validity. According to Reisman, "Mental testing in the United States of the 1890's was rapidly doing away with itself by its dogged insistence upon pursuing an illusion of scientific precision."[17]

Cattell's work in devising mental tests may have had its greatest ultimate influence because of the difficulties that he encountered rather than because of the successes in measurement that he had achieved. Just as Wundt's inability to eliminate individual differences promoted their study, perhaps Cattell's inability to measure intelligence employing psychophysical measures spurred American interest in Binet's approach of measuring more complex processes.

It would appear that Cattell's most lasting positive contribution to testing was in the approach he developed to the study of psychology during his twenty-six years at Columbia. He promoted the psychology of human capacity. He was interested in determining how well men could do in different situations, that is, he studied human

---

[17]Reisman, p. 31.

behavior in terms of its range and variability. The result was an unphilosophical functional psychology. Cattell was representative of a trend in his approach to psychology. It was an approach relatively free from the constraints of tradition, the central idea guiding its course being the concept of evolution.

The intentional and unintentional influences of Cattell's work in the area of mental testing seems to have been one of the necessary antecedents to America's acceptance of the work of Binet. By the early 1900's Americans like Stella Sharp, Henry Goddard, and Lewis Terman were becoming interested in the Binet approach to testing.

Alfred Binet

The work of French psychologists in the area of mental measurement seemed to be largely motivated by a concern for deviant individuals, more specifically, those who were mentally retarded or emotionally or socially maladjusted.

Binet recognized a need for standardized measures of intelligence to correct current problems arising from:

a) a lack of ability of certain physicians to recognize symptoms of deviance,

b) the lack of precision in description of symptoms if they were recognized,

c) the variability of the importance attached to certain symptoms, and

d) the variability of meaning in the terms applied in making a

diagnosis.[18]

Binet postulated a psychological method for diagnosis of inferior states of intelligence which involved making direct observations and measurements of the degree of intelligence.

While Galton and American psychologists were unsuccessfully attempting to infer complex abilities from simple ones, Binet and his colleagues:

> . . . believed differences in the ability to think and reason, to solve difficult problems by methods less cumbersome than actual trial and error, to make use of the experiences of the past in adapting to new conditions, can best be measured by setting the subjects' problems that involve these various processes.[19]

The influence of faculty psychology was still strong. In 1896 Binet and Henri Beaunis published an article describing tests adapted to measure abilities related to eleven faculties or mental processes, which they proposed to give to school students. The resulting experiments led Binet to make several conclusions with respect to the measurement of intelligence.

a) "There is a basic difference between the application of measures to material objects as used in the physical sciences and the application of such units to psychological processes."[20] Therefore, Binet discarded objective units of time, strength, etc., used in physical measures and concentrated on tasks which could be measured in

---

[18]Alfred Binet, The Development of Intelligence in Children (Baltimore: Williams and Wilkins Company, 1916), p. 13.

[19]Goodenough, p. 42.

[20]Ibid., p. 44.

an all-or-none fashion. He validated his proposed measures of intelligence according to criteria of increased ability to answer with increased age, school grade, and estimated intelligence.

b) Intelligence is a fundamental faculty-judgement. "To judge well, to comprehend well, to reason well, these are the essential activities of intelligence."[21]

c) Measurement of intelligence must sample across the wide range of differences in patterns of ability which exist from child to child. The need was for a short series of tasks which would be broad enough to account for the range of variations, and yet not so broad as to be a very superficial type of appraisal.

d) Emphasis should be placed upon the validity of measures rather than upon reliability, as suggested by Cattell.

Binet experimented for several years with his measures until, by the turn of the century, he had formed an hypothesis as to which tasks would be most useful and also which tasks children of certain ages would be able to perform.

Throughout his career Binet had been interested in educational problems, particularly relating to the education of retarded children. In 1904 he was consulted by a commission set up by the Minister of Public Education in Paris for the purpose of deciding how these children could best be educated.

It was within this context that Binet and Theophile Simon constructed their first formal scale for appraising the intelligence of

---

[21]Binet, p. 43.

children. It differed in many ways from earlier attempts in that:

a) it did not focus on any particular facet of ability or faculty, but sought to obtain an idea of a child's general mental development by sampling his responses to a variety of tasks,

b) it required a short time to administer, containing only thirty items, and

c) its items were arranged in order of increasing difficulty rather than according to the similarity of tasks involved.

The 1905 scale was constructed with the main emphasis placed on detection of mental defectives. Experimentation revealed that some revision was necessary. A revised version was published in 1908 which, among other things, reflected an expansion of tasks to include normal children. Another change was found in that tasks were arranged according to "age levels, experimentally determined, at which the average child performed them successfully, from three to twelve years inclusive."[22]

Binet's contribution in facilitating measurement in education was twofold in that:

a) he devised a scale for measuring mental development which proved to have some validity when compared with judgements of people working with those tested, and

b) his work was directly related to education. It was one of

---

[22]Edward L. Thorndike, Elementary Principles of Education (New York: The Macmillan Company, 1929), p. 354.

his goals to show that certain parts of the instructional program for children were not well adapted to their receptivity. Peterson (1925) quotes Binet as having stated that the "child differs from the adult not only in degree and quantity, but also in the very form of his intelligence."[23]

Binet's Influence in the United States

Henry H. Goddard translated Binet's 1908 scale and adapted it for American use in 1910. The reaction of American educators to the new test must be considered in the light of immediately preceding developments in the area of testing.

Earlier work in the United States in the area of mental measurement had proven to be of little use to educators. Cattell's attempt to predict academic success had failed to provide any useful results. When his results were published:

> . . . the educators who had waited eagerly for some demonstrable evidence that Cattell's techniques were as valid as he had promised they would be, concluded that Cattell's techniques did not work and his promises were false. As a consequence, for some time thereafter, educators disparaged testing and were extremely reluctant to consider that tests had any practical value for the school.[24]

One of the developments in America which aided the acceptance of Binet's work was in the area of achievement testing. The influence may have been reciprocal in that Binet, as the first man to construct a scale of mental measurement having some significant amount of validity, may have encouraged the continued development of achievement testing.

---

[23]Peterson, p. 192.

[24]Linden and Linden, p. 11.

Wilds (1964) states that:

> . . . the results obtained from the measurement of achievement did not have much significance until these results could be interpreted. The scales for measuring school accomplishments had to be supplemented by scales for measuring intellectual ability before any great progress could be made in the solution of educational problems.[25]

Summary of European Influences in the United States

Galton, Wundt, and Binet were included in the study for two reasons:

a) Their work represents important early attempts at measuring individual differences in intelligence.

b) They influenced developments in North America in several direct ways. Cattell studied with both Galton and Wundt, and their influence is apparent in much of his work. Binet's influence is also evident in that his works were widely used in the United States after their translation in 1910, and their initial application by Goddard.

More generally, Binet, Galton and Wundt, along with Cattell, have been considered because their work provided some of the conditions necessary for the placement of psychological testing within the context of education.

ACCEPTANCE OF PSYCHOLOGICAL TESTING IN EDUCATION

A logical continuation from these early considerations would seem to be a discussion of some of the subsequent work done in the

---

[25]Elmer J. Wilds and K.V. Lottich, The Foundations of Modern Education (New York: Holt-Rinehart and Winston, 1964), p. 328.

United States, which more directly furthered the testing movement within education.

The work appears to have proceeded along two interacting paths. The first of these consisted of advances made in the development of measures of intelligence. The course of this development was of fundamental importance in determining the quantity and quality of such measures available to educators. The second important series of developments involved creation of conditions favorable to the construction of tests directly within the mainstream of education. These tests were standardized measures of achievement. The study of the development of these tests seems justified in that the success of achievement tests provided a partial reason for educators again considering a place for mental and other types of tests within the context of education. Linden and Linden (1968) suggest that although:

> . . . mental measurement has found its application in military, industrial, and medical settings, by and large it was the schools that nurtured mental measurement in America through its early years of this century. The academic achievement test provided the prime motive for this nurture.[26]

A later consideration of this chapter is a discussion of the development of testing within the context of guidance in education. There is some evidence to suggest that psychological testing within the context of education developed prior to and at times parallel with developments in guidance. The work done by Beers in founding the mental hygiene movement, and Parsons in founding the vocational guidance movement would appear to represent important parallel developments which

---

[26]Linden and Linden, p. 19.

were instrumental in applying the developments in testing from education generally to a new context of guidance.

Development of Measures of Intelligence in the United States

Goddard found immediate application for Binet's 1908 scale in the Institute for Backward Children in Vineland, New Jersey. He also experimented with the scale on two thousand children from Vineland public schools. The results:

> . . . not only demonstrated how great was the difference between normal and feebleminded children in performance on this scale, but also showed that the public schools were carrying an unsuspectedly great load of mentally defective children.[27]

Goddard foresaw a great usefulness for the scale in selecting feebleminded children for special classes. He attributed the lack of success of these classes in the past to the lack of an objective system for selecting students. There was still opposition to testing, but it faded in the light of several demonstrations that "the tests not only worked but provided a numerical basis for indicating the degree of a child's backwardness."[28]

Goddard's enthusiasm, his experiments showing the useful application of tests, and his inclusion of testing in summer school courses for teachers at the Vineland Institute, all tended to increase the readiness of some schools to accept the Binet scale. Experiments linking mental deficiency with crime may also have been a factor. In 1912 New Jersey

---

[27]Goodenough, p. 52.

[28]Ibid., p. 56.

passed a law requiring that special classes be set up for the feeble-minded.

During the boom in the use of intelligence tests which occurred in the 1910-1916 period in the United States, testers made many errors in procedure and interpretation, "but without their impelling force, progress in the area of mental testing would unquestionably have been much slower, and there is no guarantee that the methods adopted would have been more sound."[29]

A second important development for intelligence testing was the revision of the Binet scale by Lewis M. Terman in 1916. His Stanford Revision was standardized on one thousand subjects from three to eighteen years of age. It contained two improvements over previous revisions of the scale:

a) It incorporated the concept of "intelligence quotient" which had been developed by Stern in 1910. Terman took a great deal of care in explaining the usefulness and limitations of the I.Q. Unfortunately, some persons "became all too ready to accept the test results as a final criterion by which a child's potential abilities might be determined once and for all."[30]

b) The revision included, for the first time in the history of testing, a set of standard well organized instructions for administering and scoring the test. Terman made clear the importance of not deviating from the outlined standard procedure.

---

[29] Ibid., p. 57.

[30] Ibid., p. 63.

The importance of Terman's revision is summarized by Wilds who suggests that although:

> . . . translations of the Binet scale were made and used in the United States by Goddard and others; . . . it was the revision and adaptation of the tests made by Lewis M. Terman and several assistants at Stanford University . . . that gave the intelligence testing movement its impetus in this country.[31]

A third development which was necessary for the acceptance of psychological testing within education was the construction of group measures of intelligence. Group intelligence testing received its primary impetus from World War I. Several members of the American Psychological Association set to work to build a scale which would be useful in classifying soldiers according to intellectual ability. Among the psychologists contributing data was Arthur S. Otis who had been developing a group intelligence test on his own. His data were used as a basis for the Army Alpha Test. These psychologists also constructed a non-language group test called the Army Beta Test. After the war, these tests used in school systems, made possible the measurement of intelligence of many more people than earlier tests had done.

The work of Goddard and Terman, plus the development of group intelligence tests, represent some of the necessary conditions which contributed to make directly possible the acceptance of intelligence testing by educators. The provision of these viable techniques did not provide sufficient conditions, however. The occurrence of these conditions demanded the cultivation of attitudes favorable to the use of tests within the context of education. The endeavors of men such as

---

[31]Wilds, p. 328.

James, Hall, and Thorndike appear to have been important in the formation of such attitudes. It would therefore seem logical to consider their work at this point in the study.

Other Developments which Facilitated the Acceptance of Psychological Tests within the Context of Education

Measurement within the context of education in the United States was facilitated by many of the same conditions which led to the acceptance of measures of intelligence as discussed earlier.

One condition which seems fundamental to a concern for the measurement of individual differences in the performance of children in educational endeavors is a shift in focus away from rigid pedagogical methods towards the reaction of children to these methods.

William James. Among the first men in the United States to create the conditions necessary for such a shift in focus was William James. He influenced the beginning of the child study movement in his writings about the aims of education:

> James maintained that the basis of all education is the fund of native instincts with which the child is endowed, and the purpose of education is the organization of acquired habits on the part of the individual in such a way as to promote his personal well being.[32]

Although James went against the American trend of an experimental approach to psychology, including mental tests, he was influential probably because of his personality, and his position as an alternative to the simplistic view of intelligence being offered by Wundt and

---

[32] Ibid., p. 304.

Cattell. His main contribution to education appears to have been in the area of focusing attention on the child, and suggesting educational methods be adjusted in accordance with the needs of the child.

G. Stanley Hall. One of James' students, Stanley Hall, extended the child study movement and is often considered to be the father of it:

> Hall decided to devote himself to the investigation of children's thoughts and beliefs, and to this end he devised interview procedures and questionnaires. One of the first major findings from his study of Boston school children was that boys and girls are surprisingly ignorant about things which adults assume are known to everyone, e.g., only ten percent of the youngsters knew where their ribs were located. Obviously, adults were giving children credit for knowledge which many of them did not possess, and Hall's research implied that educational practices might have to be altered if children were to make meaningful use of what they were being taught.[33]

He studied children from the point of view of genetic psychology, attempting to trace the history of mental life in a manner similar to the way Darwin had attempted to trace the history of physical life. Within his evolutionary frame of reference, Hall postulated that emotion is basic and that intellect is a later development, not only in societies, but also within individual children. His emphasis in education was upon emotional training:

> . . . the teacher must discover, through the study of genetic psychology, the stages of mental development of the race, and then so construct the curriculum and so build methods that the growth of the child will be in accord with the order of development.[34]

Hall's studies of child development appear to be significant to the development of psychological testing in several ways.

---

[33]Reisman, p. 44.

[34]Wilds, p. 303.

a) They demonstrated the existence of relatively uniform behavioral sequences which showed the possibility of constructing meaningful tests of development.

b) They illustrated the wide range of individual differences in the time at which children reach the various stages of development, pointing to the need for tests to indicate the relative position of a child with respect to his classmates.

c) The nature of behaviors prevalent in particular stages of development provided many ideas for specific items in standardized tests.

Hall's contribution to the acceptance of testing within education could be described as indirect in that he helped to create a climate favorable to child study, and direct in that he used a form of psychological test, the questionnaire, in his investigations.

More direct influences upon the development of testing in education appear to have come from two other sources. The first was the concern for the feebleminded and the drag which they placed on the rest of the students. The second was the development of standardized achievement tests to check the results of instruction given.

J.M. Rice. In the United States, one of the pioneers in achievement testing was J.M. Rice. In 1894 he conducted research into the results of spelling instruction in several major school systems and published an article entitled "The Futility of the Spelling Grind." In 1902 he studied arithmetic and language, and criticized instruction methods in both areas. Although Rice was a pioneer in large scale educational measurement, he has not been accorded a position of

prominence in the area:

> Had the man been somewhat less vitriolic in his attacks upon the American public school system of the 1890's and less vehement in his conclusions drawn from the results of his large-scale testing, Rice might have been accorded the role of eminence that his ideas of education, centered on the child and based upon psychological principles, and his large-scale investigations deserved. The tenor of the times, however, would not accept Rice as a leader of either educational thought or educational measurement. In the latter field, it was Edward L. Thorndike who came to be accorded the role of "father of educational measurement."[35]

E.L. Thorndike. Edward L. Thorndike was interested in James' approach to psychology and studied under him at Harvard until 1897. He then went to Columbia at the invitation of Cattell who encouraged Thorndike's study of animal intelligence and urged him to extend his studies to children. Thorndike made this extension in his position as professor of genetic psychology at Columbia.

In 1903 he published the first edition of Educational Psychology which became a prime force in formulating distinctions among educational psychology, child study, and pedagogy. This book, combined with other publications of studies concerning his laws of learning, applied to school subjects such as arithmetic, helped to bring about a shift of attitudes of educators towards the use of standardized measures of achievement. Many had been skeptical after Cattell's boasts for measurement within education had come to nothing.

In 1904 Thorndike published Introduction to the Theory of Mental and Social Measurements which made the Galton-Pearson statistical methods generally available to people interested in testing. This

---

[35]Linden and Linden, p. 23.

book also laid down several principles for the construction of tests, which were used for several years as a basis for test construction.

Thorndike conducted several investigations concerning educational problems which were in need of attention. In 1908 he published a study in which he concluded that fewer than ten percent of the children entering grade one completed high school. This did not mean that children left school when they were very young. Many remained, but did not progress to the upper grades. Although several states had inaugurated legislation containing minimum school leaving ages, "in the first decade of the twentieth century, there was little concept of adjusting the curriculum to the needs and abilities of the individual child."[36]

In 1909 Thorndike developed a handwriting scale. He ranked different specimens of handwriting and developed the first calibrated instrument for the measurement of an educational product:

> Thorndike's Handwriting Scale set the stage for the rapid development of tests of many educational subjects and areas. By 1910 the furor created by Rice over the state of American education had abated, and Thorndike's influence was strengthening a positive attitude towards mental testing. Educators were becoming more willing to attack rationally the problems in education created by factors such as: the expanding emphasis on individual differences initially recommended by Galton; the increasing enrollments in both elementary and high schools caused in part by the large influx of European immigrants to the United States; the continued progress of the industrial revolution with its accompanying increased need for skilled and professional workers; and the growing attention being paid to the philosophies of John Dewey and William James.[37]

In 1913 Thorndike published another influential work in three volumes entitled Educational Psychology. The volumes were The Original

---

[36]Goodenough, p. 15.

[37]Linden and Linden, p. 26.

Nature of Man, The Psychology of Learning, and Individual Differences and their Cause. The titles reflect the scope of Thorndike's interest and also the emphasis he placed upon the investigation of individual differences.

On a concrete level, Thorndike influenced the testing movement through the development of statistical methods; the construction of many achievement tests for pupils of various ages; the development of the C.A.V.D., the first test of intelligence with a true zero (according to Sandiford), and accurately scaled units.[38] He also aided the group of psychologists who were developing group measures of intelligence during World War I.

A more indirect contribution to testing is found in the general concerns expressed by Thorndike about the objectives of education.

> [He] emphasized the importance of aiming not only at the development of the child for adult life and work, but also at the development of the child in adaptation to the life of childhood itself. He held that we should strive more toward making children succeed with the problems and duties of childhood and less at fitting them for the problems and duties of twenty years after.[39]

This passage by Wilds and several writings by Thorndike reflect the development of conditions favorable to the acceptance of guidance within the context of education, however, other conditions were also necessary. Two of these conditions were satisfied by the work of Parsons and others in the vocational guidance movement and by Beers in the mental hygiene movement.

---

[38] Sandiford, p. 358.

[39] Wilds, p. 305.

ACCEPTANCE OF PSYCHOLOGICAL TESTING IN GUIDANCE

The work of Galton, Cattell, Binet, Goddard, and Terman was important in that it provided for the development of favorable attitudes towards measurement as applied to people. In a similar way the writings of James, Hall, Dewey, and Thorndike appeared to facilitate the acceptance of measurement within the context of education. In the author's opinion, the work of Parsons, Beers, and their followers acted as a bridge or mediator which facilitated the acceptance of guidance within the context of education, and the development of psychological tests within the context of guidance.

The Mental Hygiene Movement - Clifford Beers

The founding of the Mental Hygiene Movement is generally credited to Clifford Beers. Earlier attempts at work similar to that which he carried out had been largely unsuccessful. However, Beers had the determination of a man who had suffered the indignities accorded to a person who was mentally ill at the turn of the century. He also had some powerful allies to help him in William James, who wrote the introduction to Beers' book, A Mind that Found Itself (1908), and Adolf Meyer, who coined the phrase "mental hygiene."

Beers' stated objective for his book was to:

> . . . change the attitude of the public towards those who are unfortunate enough to have the stigma of mental incompetency put on them. Of course, an insane man is an insane man and while insane should be placed in an institution for treatment, but when that man comes out, he should be as free from all taint as the man is who recovers from a contageous disease and again takes his place in

society.[40]

In a letter to Beers, James said of the book: "It reads like fiction, but it is not fiction; and this I state emphatically, knowing how prone the uninitiated are to doubt the truthfulness of descriptions of abnormal mental processes."[41] To promote the change of conditions which the book described, Beers founded the first Mental Hygiene Society in Connecticut in 1908, and the National Committee for Mental Hygiene in 1909.

The aims of the movement were expanded and modified "from reform to cure, and from cure to prevention."[42] It was this final phase which had the greatest implications for guidance in education for it expanded the area of study to include childhood. Beers wrote: "No less than half of the enormous toll which mental disease takes from youth can be prevented by the application, largely in childhood, of information and practical resources now available."[43]

Luther E. Woodward, in a supplement to the 1950 edition of Beers' book, noted that:

> After the first wave of concentrated attention to the treatment of the adult mentally ill, consistent efforts have been made on the preventative side, especially by way of developing child guidance and other community psychiatric clinics . . . . As studies were made of children and youth who were involved in delinquency or whose behavior problems made home and school adjustment difficult, child guidance and other community clinics seemed to offer

---

[40]Clifford Beers, A Mind That Found Itself (New York: Doubleday Company, Inc., 1950), p. 218.

[41]Ibid., p. 244.

[42]Ibid., p. 248.

[43]Ibid.

increasing hope.[44]

Woodward also points out that the first movement in the direction of prevention was in the field of delinquency. The very earliest demonstration child guidance clinics were set up specifically to show that the child guidance clinic is a helpful means of preventing a substantial amount of delinquency. It was soon found, however, that court action alone could not curb delinquency. This led to the involvement of all aspects of community life and especially to the school and home. In the early years of child guidance work, considerable attention was therefore given to the school life of children, particularly to the study and treatment of those who showed difficulty in school.[45]

The scope of the movement also broadened to include less serious forms of mental illness. In 1912 Dr. Lewellyn F. Barker wrote that: "less marked deviations from normal thought, feeling or behavior, are also evidences either of brains defective from the start, or made abnormal in function by bad surroundings or bodily disease."[46] Dr. C. Macfie Campbell wrote, in 1921, that the concern of mental hygiene should be not only with serious mental disturbances, but also "with those other forms of mental disorders which do not necessarily mean removal of the

---

[44] Ibid., p. 330.

[45] Ibid., pp. 344-345.

[46] Ibid., p. 281.

individual from his ordinary social environment."[47] In the same year he wrote to Clifford Beers commending the National Committee for Mental Hygiene for its work with the mentally defective, the mentally ill, and the delinquent, and for "consistently aiming at bringing into education principles of prophylactic value, which promise to develop a more robust personality than the traditional education has done."[48]

The effect of this movement on testing was probably more indirect than direct. Groves (1930) suggests that although psychological tests are important in measuring the intelligence of children and gaining other information to be used as a basis for guidance, their use seems incidental compared with the impact the mental hygiene movement had on changing attitudes in the direction of studying and trying to correct human maladjustment.[49] This attitude change would seem to be more directly fundamental to the acceptance of guidance within the context of education than to the acceptance of testing within guidance. Another movement, probably more directly influential in aiding the acceptance of psychological tests, was the vocational guidance movement.

The Vocational Guidance Movement - Frank Parsons

In 1942 J.M. Brewer stated that "Vocational guidance consists in the crystallizing of right human desires vaguely felt for long years and in the

---

[47] Ibid., p. 284.

[48] Ibid., p. 259.

[49] Ernest R. Groves and Phyllis Blanchard, Introduction to Mental Hygiene (New York: Henry Holt and Company, 1930), p. 27.

shaking up of informal procedures carried on for centuries."[50] He cited four conditions which, acting together, led to the development of vocational guidance. They included the development within North American society of a division of labor, the growth of technology, the extention of vocational education, and the spread of modern forms of democracy:

> No one of these by itself insured the rise of vocational guidance; indeed, each existed long before vocational guidance arose and yet did not lead to its beginning. But all four together, we may fairly assert, almost made it inevitable. The first three made necessary some care for vocational adjustment; the fourth, democracy, set up an ideal requiring attention to guidance-in-the-strict-sense offering not advice but counsel, and allowing for self-determination: freedom, within certain limits, to make ones own decisions.[51]

Changes affecting education made the school a place where vocational guidance was needed. Some of the forces underlying these changes included:

> . . . introduction of a commercial curriculum, the large enrollment in secondary schools resulting in broadening of the program to include the sciences, practical arts, manual training and home economics, together with the school-leaving and child-labor problems leading to compulsory education laws.[52]

Credit for developing and nurturing a model for vocational guidance is usually given to Frank Parsons. He was educated as an engineer and a lawyer, and was very much involved with social reform and civic developments. In pursuing his interests, Parsons became involved in the adult education movement in Boston in 1901 and then in "the problem of adolescent confusion and discouragement caused by

---

[50]John M. Brewer, History of Vocational Guidance (New York: Harper and Brothers, 1942), p. 16.

[51]Ibid., p. 3.

[52]Ibid., p. 52.

difficulty in choosing an appropriate career based on possessed aptitudes and capabilities."[53] He began to elaborate his ideas in a series of lectures which generated interest to such an extent that he was able to establish an active practice in vocational counseling. In 1907 Parsons organized the Vocations Bureau of Boston, the first such facility in the United States. It was formally opened in 1908.

From the Vocations Bureau, vocational guidance spread rapidly to the schools of Boston:

> Dr. Stratton D. Brooks, Superintendent of Schools of Boston during the years following that in which the Vocations Bureau was organized, asked for help for the schools, introduced vocational counseling into the Boston school system (1909) and thus launched the movement into the school systems of the country.[54]

From there, similar extensions occurred in other schools and universities in the United States. However, it is not within the scope of this thesis to study the chronology of this expansion. Suffice it to say that the practice of vocational guidance was promoted in the schools from the inception of the vocational guidance movement.

Parsons outlined his model for vocational guidance in Choosing a Vocation, which was published posthumously in 1911. He emphasized the need for such guidance in stating:

> We guide our boys and girls to some extent through school, then drop them into this complex world to sink or swim as the case may be. Yet there is no part of life where the need for guidance is more emphatic than in the transition from school to work - the choice of a vocation, adequate preparation for it, and the attainment

---

[53]E.G. Williamson, Vocational Counseling (New York: McGraw-Hill, Inc., 1965), p. 76.

[54]Brewer, History of Vocational Guidance, p. 65.

of efficiency and success.[55]

He further stated:

> In the wise choice of a vocation there are three factors: (1) a clear understanding of yourself, your attitudes, abilities, interests, ambitions, resources, limitations, and their causes; (2) a knowledge of the requirements and conditions of success, advantages and disadvantages, compensation, opportunities, and prospects in different lines of work; (3) true reasoning in the relations between these two groups of facts.[56]

Parsons' position was that every person needs help in dealing with all three of these factors. He needs the careful and systematic counsel by experienced minds in making what Parsons viewed as one of the greatest decisions of a person's life. Procedures which could be employed by those providing such counsel were organized under seven headings:

I Personal Data

II Self Analysis

III The Person's Own Choice and Decision

IV Counsellor's Analysis

V Outlook on the Vocational Field

VI Induction and Advice

VII General Helpfulness in Fitting into the Chosen Work

Parsons' contributions to guidance in the school, and the use of psychological tests within the context of guidance has been summarized by several authors. Brewer considers the following to be significant:

---

[55]Frank Parsons, Choosing a Vocation (New York: Agathon Press, Inc., 1967), p. 4.

[56]Ibid., p. 5.

> a) Parsons paved the way for undertaking the work [vocational guidance] in schools, both by the methods he used and by the direct statement that schools and colleges should take up the work.
>
> b) He began the training of counselors, planning group meetings for that purpose.
>
> c) He used all of the scientific tools available to him; there is evidence that he would have used various kinds of standardized tests if these had then been available. He used rating scales, interview techniques, and specific assignments.[57]

Shertzer and Stone confirm Brewer's third point, adding that Parsons' emphasis upon objective observation in gathering information about his clients facilitated test development.[58]

Although Parsons' work towards implementing vocational guidance within the context of the school was continued after his death in 1908, the favorable attitude which he promoted towards testing was not. Myer Bloomfield, his successor as director of the Vocations Bureau, discounted the use of psychological tests on the grounds that they had not yet been perfected. Occupational ability profiles which could have been used in occupational diagnosis were not yet available. The people working at the Bureau seemed to operate from the point of view of using whatever was practically useful in vocational guidance. Their objection to tests does not appear to have been an objection to measurement of individual differences. Rather, it was a case of deciding which method held the greatest validity for the task at hand, diagnosis by an individual or diagnosis by a series of standardized tests. In the light of current

---

[57]Brewer, History of Vocational Guidance, p. 64.

[58]Bruce Shertzer and Shelley C. Stone, Fundamentals of Guidance (Boston: Houghton Mifflin Company, 1966), p. 53.

test development, they opted for the former.

Perhaps because of their decision, Parsons' followers seemed to place emphasis upon supplying occupational information, rather than upon individual diagnosis. At the same time, psychologists worked to supply new techniques not available to Parsons in the diagnosis of interests and aptitude, and also to revise descriptions of vocations from the point of view of required abilities and aptitudes.

Development of Tests Within the Context of Vocational Guidance

Psychologists in the 1900's were lacking in knowledge of human motivations. Parsons and his successors seemed to go only as far as observing that choice of the wrong career meant frustration of motivation.

The task of theorists, then, was to formulate hypotheses with respect to factors determining motivation. Three factors seemed to gain successive prominence in studying the reasons for successful vocational adjustment. These were intelligence, special abilities, and interests. It was also these three criteria which test developers focused upon in an attempt to predict vocational adjustment.

"During the early phases of testing for vocational selection, intelligence was considered the most important factor conditioning job success."[59] A great deal of enthusiasm was engendered over studies which correlated intelligence levels with certain occupations. In 1918 results of army testing were released, providing a hierarchy of occupations corresponding to intelligence levels. Enthusiasm over this list

---

[59]Brewer, History of Vocational Guidance, p. 207.

for use in guidance began to dwindle when it was considered that the intelligence levels were only averages, and could be used in guidance only to suggest very general occupational levels. Also noted was a large overlapping of intelligence ratings for different occupations. Studies performed by Flanders in 1918 showed no correlation between scores on the Stanford-Binet and success in a particular occupation. In 1920, as a result of an experiment conducted among high school pupils, William M. Proctor concluded that "intelligence tests could be used only to differentiate between those of high and low intelligence and not to determine in what occupation a child belongs."[60]

Paralleling the attempts to use intelligence level as a criterion for prediction of vocational adjustment were attempts to develop measures of special abilities to serve the same purpose. Carl Seashore was one of the first to devise one of these tests, for the vocation of singing, in 1912. In 1914 John Stenquist developed the first tests of mechanical aptitude. They were later revised to become the Minnesota Assembly Tests. This battery, when used with a test of general intelligence, became the "first suggestion of a rough vocational guidance scheme."[61] The only other special ability to be measured at that time was clerical ability. The work was first done by Thurstone and was soon adopted by many businesses for the purpose of selection.

Investigation also proceeded along another dimension, the study

---

[60] Ibid., p. 208.

[61] Ibid., p. 209.

of the significance of interests in vocational adjustment. Parsons recognized the significance of interests for vocational guidance and asked questions concerning leisure time activities, hobbies, reading, etc., for the purpose of aiding vocational choice. One of the first psychologists to work with interest questionnaires was James Burt Miner. In 1918 he developed his interest blank and gave it to ten thousand pupils in Pittsburgh public schools. It consisted of an extensive series of questions covering personal history, high school subjects preference, preferred working conditions, personal strengths and weaknesses, and out of school activities. Testees were to rank several given occupations, state occupational preference, list capabilities for these preferences, and indicate any previous counselling.

In 1919 C.S. Yoakum attempted to measure vocational interests by comparing statistically the interests of one group with another, but the most significant work in the area of interests was done by E.K. Strong in the middle and late 1920's:

> Strong demonstrated that workers in different occupations have distinctive patterns of interests, and that these differences apply not only to actual work itself but to a number of other apparently unrelated habits and associations.[62]

In Brewer's estimation, the endeavors of Miner and Strong are among the most important contributions to the vocational guidance movement. Other later developments of tests of character and personality were of little significance in the early work of vocational guidance. The importance of personality in vocational adjustment was slow in being recognized.

---

[62] Ibid., p. 213.

Up to the early 1920's the use of intelligence and interest tests for vocational guidance was very limited. Intelligence tests were being used for the purpose of ability grouping and course selection. A survey in 1925 showed no general use of interest tests, but Brewer suggests that the scattered use of these tests by individuals helped to further the use of this technique in vocational guidance.

Comparative Influence of Vocational Guidance Movement and Mental Hygiene Movement

The vocational guidance movement and the mental hygiene movement appear to have differed in the directness of their influence concerning activities relevant to the use of tests within the context of guidance.

The mental hygiene movement was perhaps less direct in its influence. It pointed to the need for recognition of children's individual levels of development, and to the necessity of patterning their education accordingly. However, workers in mental hygiene initially focused primarily on guidance outside the school in community guidance clinics. Their approach was strongly psychoanalytic and the only testing done to any extent was intelligence testing.

Considering a broader perspective, the efforts of the mental hygiene movement and later the child guidance movement, helped to facilitate a favorable attitude on the part of educators towards the importance of vocational adjustment. This change of attitude was fundamental to the acceptance by educators of the specific techniques of vocational guidance, including the use of psychological tests, within the context of education. The mental hygiene point of view may also have assisted in ultimately broadening the context of guidance

beyond vocational, to include more of the activities suggested by the model presented in chapter one.

Development of a Model for Testing Within Guidance in Education - E.L. Thorndike

The influence of both the mental hygiene and vocational guidance movements is evident in the objectives for education suggested by E.L. Thorndike in Elementary Principles of Education (1929). Thorndike's views have been chosen for discussion as they appear to represent a synthesis of both of the above points of view and to reflect the educational philosophies postulated by James, Hall, and Dewey. His ideas would also seem important in that he was influential in the training of many educators, including several from Canada. The importance, and some indication of the direction of his influence, is reflected in a statement made by one of his students in 1924:

> . . . a graduate student in psychology cannot spend many weeks at Columbia without becoming aware of the immense importance of curves of distribution, of individual differences, of the measurement of intelligence and other human capacities, of experimental procedures and statistical devices, of the undercurrent of physiological thought. He discovered immediately that psychology does not lead a sheltered life; that it rubs elbows with biology, statistics, education, commerce, industry, and the world of affairs.[63]

Thorndike formulated objectives for education on the basis of human needs. He arranged the needs of students according to two classes, each containing five sub-groups. "The first class deals with the need of proper adjustment to phases of our present day environment: the second class has to do with several types of equipment needed by every

---

[63]Linden and Linden, p. 25.

individual."[64]

Under adjustments to situations of modern life are the following:

a) Adjustments to the Physical World

Society has increased in complexity to the extent that parents need help in exposing their children to it. Adjustment to the physical world requires an ability to use products of the new technology and have some idea of the principles upon which they operate.

b) Adjustments to Economic Situations

Because of increasing technology, education must take on a more practical role in preparing the student for a place within society. Although Thorndike subscribed to Dewey's view of education as helping students to be happy as children, he also foresaw one function of education as helping them to be able to live happily in society as adults. Education's role in this latter process would consist of aiding a student to achieve fitness for a vocation productive and satisfying to him, and in helping him to understand the economic trends of the time. According to Thorndike, these activities "require that the school study the vocational interests and capacities of pupils"[65] in order to facilitate economic adjustment.

---

[64]Edward L. Thorndike, Elementary Principles of Education (New York: The Macmillan Company, 1929), p. 33.

[65]Ibid., p. 38.

c) Adjustments to Family Situations

Reflecting a mental hygiene point of view, Thorndike stated that education in schools and elsewhere "should aim not only to give students the facts available at the time, but also to cultivate habits of continuing their education for the improvement of the family life of themselves and their children."[66]

d) Adjustments to Social Situations

Thorndike suggested that the school should facilitate harmonious interaction among different sub-groups of society through providing accurate knowledge about these groups, and contact with them. In doing this it would be "promoting adaptability to the crowded conditions of modern life and of contributing to the larger social consciousness of a universal society."[67]

This objective for education coincides with an objective for mental hygiene of preventing mental disturbances through facilitating early adjustments.

e) Adjustments to Civic Situations

Thorndike suggested a role for the school in promoting civic concern "which embraces knowledge, skill, interests, and habits . . . developed by participation in democratic

---

[66] Ibid., p. 41.

[67] Ibid., p. 43.

life to the fullest possible extent."[68]

Thorndike hypothesized that the five adjustments could best be promoted through helping students to develop certain necessary personal resources. These are quite self-explanatory and include physical health, mental health and balance, recreational resources, ethical and religious resources, and intellectual resources.[69]

These needed individual resources are directly related to a mental hygiene point of view and would seem to indicate a recognition for the need of a broad guidance function within education.

As has already been suggested, Thorndike considered techniques of standardized measurement to be of major importance in enabling educators to achieve their objectives. He summarized types of tests under five headings as: measures of information; measures of abilities to think, judge, reason, etc.; measures of motor skills; measures of conduct; measures of interests; appreciations, attitudes, ideas, etc. In considering the status of these different types of tests at the time, Thorndike stated that:

> . . . while the tests now available in inexpensive forms and usable by relatively inexperienced examiners are mainly designed to measure the narrower products of education such as information and skills in common subjects, technical experts are busily engaged in developing tests and measures of the other phases of educable abilities.[70]

Thorndike suggested several areas of use for psychological tests

---

[68] Ibid., p. 45.

[69] Ibid., p. 34.

[70] Ibid., p. 293.

designed to "decrease the element of subjective bias and to increase the accuracy, fullness, and minuteness of appraising the products of education."[71] Tests could be used in:

a) developing respect for education by increasing the objectivity of assessment of abilities;

b) setting of standards of achievement for individual pupils on the basis of measured capacity to make expectations coincide more closely with realistic probable attainment;

c) facilitating adjustment to individual differences by grouping students according to measured ability;

d) educational diagnosis using measurement devices to detect any areas of specific deficiency for remedial work;

e) educational and vocational guidance, using tests of interest and aptitude to prevent vocational and educational maladjustment in so far as is possible;

f) improving school records and reports through standardization of procedures;

g) comparing productiveness of different educative means; and

h) determining objectives for education.

These areas of use are significant in that they suggest a large role for tests within education, and, more specifically, an important role for measurement within the context of guidance in education.

Thorndike's writings represent an early synthesis of

---

[71] Ibid.

representative points of view establishing measurement within guidance. In a sense they represent the end of a pioneering phase, close enough to the beginning to have been directly affected by early influences and developments, and yet late enough to benefit from necessary advances in theory and technology.

SUMMARY OF EUROPEAN AND AMERICAN DEVELOPMENTS

Developments basic to the acceptance of testing within guidance can be grouped into three major areas:

a) Development of measures of intelligence

Galton, Wundt, and Cattell made important early attempts at measuring individual differences in intelligence. Through application and revision of Binet's Scale, Goddard and Terman helped to make intelligence tests widely used and accepted in the United States. The development of group measures during World War I made possible the widespread use of intelligence tests in education.

b) Test use within the context of education

Work by such scholars as James and Hall promoted the objective study of education, arising out of a concern for the student in the educative process. Some of the earliest investigations involved curricula. As a result, several tests of achievement were constructed to determine whether or not stated objectives were being attained. Men prominent in this area were Rice and Thorndike. Other investigations involved the use of intelligence tests,

usually to detect feebleminded students.

These activities tend to represent the development of an attitude favorable to test use within the context of education, as well as a growing concern for the satisfactory adjustment of students.

c) Measurement within the context of guidance

Beers and Parsons helped to crystallize concerns of educators into specific discussions of mental health within a context of guidance. The work of Parsons, particularly, also helped to develop a role for psychological tests within the vocational aspect of the total guidance program. The result was the emergence of tests of achievement, intelligence, interest, and personality to facilitate the objectives of the new guidance function. Several of these tests were well classified and explained in terms of their role within guidance by E.L. Thorndike.

It would seem logical to end the consideration of the influences basic to the acceptance of testing within guidance at this point. The next chapter will consider the changes in the importance ascribed to testing within guidance in Canada once its position had been established elsewhere.

Chapter 3

DEVELOPMENTS IN CANADA

R.L. Thorndike and E. Hagen divide the first sixty years of the twentieth century into four equal parts with respect to psychological and educational measurement in the United States:

a) the pioneering phase (1900 - 1915),

b) the period of rapid acceptance or "boom" (1915 - 1930),

c) the period of critical appraisal (1930 - 1945), and

d) the period of test batteries and testing programs (1945 - 1960).[1]

Chapter two dealt with some American developments that occurred in the first two phases, and which appear to be relevant to corresponding events in Canada. However, a survey of Canadian writings indicated that the distinct divisions applied to United States events are not useful in describing Canadian developments. In the opinion of the author, one reason for this is that many ideas used in Canada originated in other countries. In many instances Canadians applied techniques only after they had been evaluated and refined elsewhere. This created a less distinct pattern of events than the one described by Thorndike and Hagen regarding the United States. Historical developments in Canada, therefore, need to be described according to a more general system of organization.

---

[1]R.L. Thorndike and E. Hagen, Measurement and Evaluation in Psychology and Education, pp. 5-6.

The purpose of this chapter is to consider some Canadian events using the following guidelines:

a) the role of psychological tests within the context of education at the beginning of the twentieth century,

b) changes in the functions of these tests as their use became more widespread,

c) roles ascribed to psychological tests within an emerging concept of guidance in education in the 1930's and 1940's, and

d) official roles given to testing within the context of the formal guidance departments set up by provincial departments of education.

Most of the writings cited in this study were obtained from A Bibliography of Canadian Education. The bibliography is quite comprehensive in that it spans a period of years from the 1900's to the present, and contains studies important to the subject of the thesis. The articles selected for use are the ones which the author thought were the most relevant in describing the evolution of the testing movement in Canada.

CONCERNS LEADING TO THE FIRST USE OF PSYCHOLOGICAL TESTS

There is some evidence to suggest that Canadian educators in the early part of the twentieth century were beginning to recognize the need for the study of the profound effects which school may have on children, and of the importance of individual differences among school children. Initially, Canadian studies appear to have dealt largely with children who were

classified as feebleminded. In 1914 E.R. Johnstone called for the establishment of special classes for the feebleminded in the public schools with provision for manual, industrial, and practical training.[2] C.G. Fraser, writing in 1916, agreed, stating that:

> . . . each human soul has some value. Each individual is somewhat better than a mere beast, though it does not always appear. Each has some qualities and talents which, if developed and utilized, would add to the welfare of the race, but each talent calls for a different training and each child requires a different course of treatment.[3]

He recommended segregation of the feebleminded for the following reasons:

a) They need special attention suited to their capacities.

b) They cannot keep pace with the average child.

c) They demand more time and therefore the rest of the class does not receive enough attention.

d) They constitute a moral menace to the rest of the children.

Several authors agreed with his point of view. In 1922 N.L. Burnette reviewed the treatment given to defectives in suggesting a program of prevention through:

a) early recognition of the child's problem and his placement in a special class,

b) vocational guidance, perhaps leading to an industrial placement school attached to a regular school, and

---

[2]E.R. Johnstone, "Waste Humanity," The Public Health Journal, V, 4 (April, 1914), 209.

[3]C.G. Fraser, "Feebleminded and the Public Schools," The Public Health Journal, VII, 5 (May, 1916), 237.

c) continuous social service after industrial placement.[4]

The concern expressed for the feebleminded had implications for vocational guidance and for psychological testing. Several recommendations were made as to how tests could best be used. In 1920 A.L. Rogers from Baltimore, writing in the Canadian Journal of Mental Hygiene, suggested the use of standardized achievement tests to discover students' capabilities.[5] Others suggested the use of intelligence and achievement tests for the same purpose.

One of the more extensive claims for the usefulness of intelligence tests came from C.E. Kellogg in 1923. In his opinion these tests could be used relatively easily by most educators. He outlined the work of Binet and suggested current applications to educational problems. According to Kellogg, Binet's scale allowed for the prediction of a person's intellect at maturity by measuring it in childhood. He also considered possibilities for use of the test in vocational guidance. "To the extent that vocational success depends upon intelligence, vocational guidance is . . . possible at an early age before vocational training need be begun."[6]

EARLY USE OF PSYCHOLOGICAL TESTS

A large proportion of the testing in the early 1920's was

---

[4]N.L. Burnette, "Mental Defect and Social Hygiene," Public Health Journal, XIII, 2 (February, 1922), 72.

[5]A.L. Rogers, "The Message of Educational Psychology to Parents and Teachers," Canadian Journal of Mental Hygiene, II, 2 (1920), 63.

[6]C.E. Kellogg, "Mental Tests and Their Uses," Dalhousie Review, II (1923), 494.

done by people concerned about education, but not directly involved in the educative process. For example, a great deal of work was carried out by the members of the Canadian National Committee for Mental Hygiene. In 1920 and 1921, this group conducted mental hygiene surveys in British Columbia, Saskatchewan, Nova Scotia, and Montreal. One of the important tasks of these surveys was the identification of feebleminded children in the schools through the use of intelligence tests. Among the recommendations which resulted from the surveys was one which suggested that the school had a responsibility in identifying these children. The importance of this diagnosis was stressed in view of the connection revealed between mental deficiency and delinquency.

A group interested in mental hygiene opened a Child Guidance Clinic in Montreal in March, 1923. G.S. Mundie and B. Silverman noted that:

> Its purpose is to study, help and advise in the case of any problem child referred to it, whatever the problem might be. A psychological examination is made in order to determine the mental development of the child as compared with other children the same age, to measure his educational progress, and to discover special abilities and disabilities. This is done by applying standardized tests, such as the Stanford Revision of the Binet-Simon Intelligence Tests, Porteus Maze Tests, Healy Pictorial Completion Test II, Healy Construction Puzzles, etc.[7]

Parents, teachers and agencies were advised as to the type of educational facilities which would be most beneficial for their children. The authors noted, however, that school boards were legally compelled to educate only those children of "sound mind." There were no special classes in Montreal for feebleminded or emotionally disturbed children.

---

[7]G.S. Mundie and B. Silverman, "The Child Guidance Clinic," The Public Health Journal, XV (October, 1924), 444-45.

USE OF PSYCHOLOGICAL TESTS WITHIN EDUCATION

The use of psychological tests appears to have been quite sporadic during the early 1920's. Examples of uses cited reflect a concern for grouping according to ability and for vocational guidance.

In articles in 1922 and 1924, C.B. Willis presented experiments conducted in Edmonton, Alberta. He inferred the problem of his study in the following statement: "The teacher may overcome defective application, but can scarcely overcome the handicaps of defective mentality."[8] On the basis of a student's results on the National Research Group Intelligence Tests, his parentage, home environment, and personal history, Willis attempted several corrective measures.

a) New pupils were placed into eight year (average), nine year (below average), or seven year (above average) programs. Feebleminded students were placed in ungraded classes.

b) Promotions and retardations in schools were based to some extent on I.Q. test results as well as results on achievement tests.

c) Delinquency and laziness were dealt with partially on the basis of results on I.Q. tests. Because of the established connection between mental deficiency and delinquency, pupils scoring within the defective range were given special attention in an attempt to curb delinquency. Pupils scoring high on intelligence tests and low on school achievement tests

---

[8] C.B. Willis, "The Grading and Promotion of Children," Canadian Journal of Mental Hygiene, III, 4 (January, 1922), 294.

were considered to be lazy, and therefore subject to pushing and reprimanding to increase their performance level.

d) Vocational guidance was attempted, partially on the basis of intelligence test results. Willis contended that "people should be admitted into professional schools on the basis of I.Q., partially at least, to keep out inferior people."[9]

The University of Alberta in Edmonton was also doing work in the area of psychological testing. E.D. MacPhee (1923) noted that a committee had recommended the institution of courses in psychology applicable to several fields, including testing. It was also suggested that summer school courses in psychometry be offered to teachers. The committee had the broad objective of advancing the principles of mental hygiene with testing as one of its methods.[10]

Dr. D.J. Dunn (1924) indicated that the first mental survey in Edmonton was conducted in 1914. He also stated that teachers who had taken the psychology courses offered at the University reported more accurate grading and placement of pupils. Another Alberta development which Dunn mentioned was the existence of special classes for mental defectives in Edmonton and Calgary by 1924.[11]

Articles by Eric Kent Clarke in 1920 and 1923 indicate that similar work was being carried on in Toronto. A survey of Toronto

---

[9] Ibid., p. 296.

[10] E.D. MacPhee, "Research on Mental Hygiene," The Public Health Journal, XIV, 8 (August, 1923), 345.

[11] D.J. Dunn, "Mental Hygiene Activities in the Public Schools," The Public Health Journal, XV, 2 (February, 1924), 57-62.

public schools in 1920 revealed a large percentage of mentally defective children who were a source of classroom problems. Solutions such as setting up industrial classes and special clinics were suggested.[12]

The test most often used in Toronto schools at this time was the Stanford Revision of the Binet-Simon Test. E.J. Pratt (1921) suggested that the test results be used in vocational guidance:

> As standardization in the field of mental tests is a comparatively recent development in psychology, there has not been much opportunity to study side by side, in statistical form, the industrial records of adults with the mental coefficients of the same persons as children attending the public schools. A comparative study into such results would be a factor, not only in increasing the efficiency of school methods, but also in determining to some extent the selection of trades and professions and would affect reciprocally the tests themselves.[13]

In Vancouver, special classes for imbeciles were established in 1912, and in 1918 a Psychological Clinic was set up. The study of abnormal mentality proceeded from simple teacher classification, to the administration of group tests to whole classes, to the administration of A Goddard or Terman revision of the Binet-Simon Scale to students who were classified as defective as a result of the group tests. Children whose scores showed them to be more than two or three years retarded were placed in observation classrooms for further study.[14]

The work done in Vancouver seemed to generate a great deal of

---

[12]E.K. Clarke, "Survey of Toronto Public Schools," Canadian Journal of Mental Hygiene, II, 2 (July, 1920), 184.

[13]E.J. Pratt, "The Application of the Binet-Simon Tests to a Toronto Public School," Canadian Journal of Mental Hygiene, III, 1 (1921), 96.

[14]A.J. Dauphinee, "Vancouver's Sub-Normal Problem," Canadian Journal of Mental Hygiene, III, 1 (1921), 120.

interest. Dr. Eliza Brison mentioned it in an article which outlined the problems found in Nova Scotia and which stressed the need for similar work in that province.[15]

INITIAL CRITICISM OF TEST USE

In 1918 C.M. Hincks suggested that the Binet-Simon test is a measure of intellectual level, not mental level. From his point of view intellectual level represents only one facet of mental functioning, in some cases a relatively unimportant one compared with emotional and volitional facets.[16] White (1920) noted that the scale is "a very valuable tool in the hands of a skilled observer, but as a be all and end all of child psychology it may become quite as vicious in its results as the fatalism inspired by fake theories of heredity."[17]

Others, such as W.A. Tait (1921), summarized the opposition to the routine manner in which some medical men and educators were inclined to use intelligence tests:

> All results of age level tests must be viewed with due consideration to the social perspective, education, environment, temperament, and family history. All of these play a part in the child's responses and must be considered in making any diagnosis.[18]

---

[15]Dr. Eliza Brison, "The Training of Sub-Normal Children," The Public Health Journal, XIII, 8 (August, 1922), 353.

[16]C.M. Hincks, "Mentally Deficient Children," The Public Health Journal, IX, 3 (March, 1918), 103.

[17]W.A. White, "Childhood: The Golden Period for Mental Hygiene," Canadian Journal of Mental Hygiene, II (July, 1920), 151.

[18]W.A. Tait, "The Gifted Child," Canadian Journal of Mental Hygiene, III, 3 (1921), 268.

He noted the importance of having trained people administer and interpret such tests, and suggested a new use for intelligence tests in the identification of "supernormals" instead of just the mentally deficient.

The criticisms cited reflect a concern over the misapplication of intelligence tests. It is difficult to determine whether the criticism was a reaction to Canadian practices or to those occurring in the "boom" period in the United States. In any case it represented a trend of critical evaluation of psychological testing which has continued to the present.

The articles either supporting or criticizing the use of psychological tests suggest a limited role for such tests in the early 1920's. The only tests used to any extent were intelligence tests and these were used mostly to identify the feebleminded. At the same time, however, educators were beginning to be more firmly committed to the use of tests and more selective in applying them. One man prominent in expanding and clarifying the applicability of psychological tests in education during this period was Peter Sandiford.

PETER SANDIFORD

Peter Sandiford published books and articles from 1910 to 1938, dealing with teacher training, educational psychology, measurement of teacher ability, and validation of test items.

He was a lecturer at Manchester, England, before he came to Canada, and to some extent may have represented an English influence in the area of measurement in education. However, he received his Ph.D. at Columbia, working with E.L. Thorndike, to whom he dedicated

a 1913 publication. In the preface of Mental and Physical Life of School Children Sandiford wrote:

> I have received help from every previous writer on the subject whose works I have read, but I should like to acknowledge my special indebtedness to the writings of Dr. E.L. Thorndike. The inscription of the book to this highly original thinker and investigator is but a poor recognition of the help and stimulus I have received from him.[19]

In a 1928 publication Sandiford outlined his views regarding the importance of techniques of measurement in educational psychology. He defined the subject matter of educational psychology as:

> . . . the behavior of human beings undergoing the process of education. Generally speaking it deals with the young rather than the old, and with the learning situations of the school rather than those of the wider environment.[20]

The subject matter was divided into five parts:

a) The original nature of man

b) The psychology of learning

c) Psychology of special subjects

d) Child study

e) Educational statistics.

Sandiford suggested that statistics are important to psychology:

> Human and animal behavior is variable. Psychological measurements, therefore, are measures of variable quantities. For their interpretation a statistical technique is essential. The application of statistics to educational measurements now forms an important branch of educational psychology. For advanced students of the subject it forms an indispensible part of their equipment. Indeed much of the recent literature in the field remains a sealed book unless the student understands the meaning of some of the

---

[19]Peter Sandiford, Mental and Physical Life of School Children (London: Longmans, Green and Company, 1913), p. viii.

[20]Peter Sandiford, Educational Psychology (London: Longmans, Green and Company, 1928), p. 9.

statistical terms and the simpler methods of statistical computation.[21]

Although Sandiford applied statistical methods to several areas in his 1928 book, the major section was devoted to their application in understanding the nature and measurement of intelligence. He made the following comments regarding the use of intelligence tests.

a) Colleges and universities use these tests at least as a partial basis for determining admission, and for grading students afterwards.

b) The second important application of intelligence tests is found in the diagnosis of feeblemindedness, superior intelligence, special abilities and disabilities of children, and maladjustments of an educational or social nature. For diagnostic purposes, individual tests must be employed, since a close contact with the individual is necessary in such cases.

c) The third main use is in prognosis, in forecasting the intellectual or vocational future of young persons. It should be remembered, however, that intelligence is only one of the factors, albeit an important one, in determining success.

d) Vocational tests, special forms of intelligence tests, are still in their infancy. Their accomplishments, so far, have been singularly disappointing, chiefly because the makers of these tests have not sufficiently taken into account the

---

[21] Ibid., pp. 9-10.

specialized nature of the problem confronting them.[22]

In 1927 and 1928 Sandiford published a bibliography of tests which he considered applicable to the Canadian scene.[23] The bibliography is composed of standardized achievement and intelligence tests mostly originating from the United States. Measures of interest and personality were being developed in the United States, but were not included in the bibliography, probably because they had not been used to any great extent in Canada.

Sandiford's work was important in that he provided the first Canadian synthesis of views regarding measurement in education, his books were used in several normal schools and teachers colleges, and he was directly influential through his position as professor at the University of Toronto.

EARLY SURVEYS AND THESES

Sandiford's writings indicate the emerging role of psychological testing in education as do many early surveys and theses. The initial surveys tended to reflect a use for tests within the broad context of education, while those in the 1930's tended to delineate a place for tests within the context of vocational guidance. The first large scale survey was done in British Columbia in the mid-1920's.

Putman-Weir Survey

The Putman-Weir Survey was conducted in British Columbia in

---

[22] *Ibid.*, p. 164.

[23] Peter Sandiford, "A Bibliography of Intelligence and Educational Tests," *The School*, XVI (December, 1927) (April, 1928).

1924-25. It covered several aspects of education, including school organization and administration, retention of teachers, vocational education, and teacher education. Among the several objectives set out by the people conducting the survey was one regarding the value and use of achievement and intelligence tests.

The testing program was organized by Dr. Peter Sandiford. J.H. Putman and G.M. Weir note that:

> British Columbia may fairly claim the distinction of being the first province in Canada to use standardized intelligence and achievement tests on a large scale in connection with an educational survey. For introducing this innovation the educational authorities of this province are deserving of high commendation. The way has thereby been opened for a notable advance in the scientific measurement of education both in British Columbia and, it is hoped, in other provinces as well.
>
> Unfortunately, there are no Canadian tests standardized for Canada, and, as Dr. Sandiford points out, the use of American tests in content studies such as history and geography, would have been inadvisable. These tests are based on American courses of study which differ radically from those prescribed for British Columbia schools. For this reason the survey undertook the preparation of several objective tests which, it is hoped, will eventually be standardized.[24]

Putman and Weir defended their use of tests by stating that:

> Findings or conclusions based on the scientific use of standardized intelligence and achievement tests are obviously more authentic than the mere opinions of schoolmen and administrators, and constitute the most reliable sources of information on classroom conditions available in B.C.[25]

They suggested that criticisms of the use of tests had arisen as a result of false expectations with respect to what tests could measure.

---

[24] J.H. Putman and G.M. Weir, Survey of the School System (Victoria: King's Printer, 1925), p. 355.

[25] Ibid., p. 356.

The criticisms were categorized under two headings - moral and vocational. Regarding the first group, the authors pointed out that intelligence tests "are designed to measure ability to learn rather than willingness to learn or capacity to be good."[26] With respect to the second they commented: "Only in an indirect way can it be said that intelligence tests can predict vocational aptitudes."[27] They took the position that intelligence tests are able to suggest broad areas of vocational possibilities only.

In the survey itself, American tests were employed where the norms seemed to be applicable, while in other areas Canadian tests were used. A list of the tests used is given in Appendix A. The following conclusions were made as a result of the testing program.

a) Chinese and Japanese alien groups are superior to other racial groups in intelligence.

b) People who enter teaching have a lower intelligence rating than do people in other comparable professions.

c) Pupils in rural areas are not given enough opportunities to develop the capabilities which their intelligence ratings would suggest they possess.

d) Too much emphasis is placed upon subjects such as learning to spell, learning to write, learning to read; the tool subjects.

The Putman-Weir survey is significant in that it was the first study of its type in Canada to make wide use of psychological tests.

---

[26] Ibid., p. 357.

[27] Ibid.

The conclusions drawn from the test results reflect the observed needs in education at the time. It can also be noted that the test results were considered within the context of education generally, rather than within a guidance model.

A series of studies, smaller in scope, were conducted by Dr. M.E. Lazerte and Dr. H.E. Smith in Alberta. Tests were used in these studies, but the conclusions and recommendations were much more detailed and specific.

M.E. Lazerte Surveys in Alberta

The Lazerte surveys were conducted in the late 1920's and early 1930's in several small communities in Alberta. Examples considered here are the Fort Saskatchewan survey (1931) and the Lamont survey (1934). Both of these studies described school conditions and facilities, but the major emphasis was given to test results and their interpretation. Most of the tests used were American, although some were constructed specifically for the surveys. One of the Canadian standardized tests used was the Lazerte Diagnostic Problem-Solving Test in Arithmetic.

In the Fort Saskatchewan study, intelligence and achievement tests were administered along with tests of emotionality and vocational interest. Lazerte summarized test results for pupils scoring below one hundred on the intelligence scales. On the basis of these results he made recommendations with respect to their educational and vocational futures. Two examples of these reports are given in Appendix B. Judging by the suggestions made it would seem that heavy reliance was placed on test results in making some fairly specific recommendations.

In the Lamont survey, the emphasis was on achievement tests. No case studies were written about individual pupils.

Lazerte's approach was similar to that used in the Putman-Weir survey in that he administered external achievement and intelligence tests at least partially in order to check teaching standards. It differed in that he attempted to provide educational and vocational direction for individual pupils on the basis of the tests. The fact that he chose for special consideration those students scoring below average on the intelligence tests could reflect a current concern for less able children regarding their educational and vocational success.

Other studies in the 1930's concerned a broader role for vocational guidance, including students of all intellectual levels. These theses are significant in that they represent an emerging role for testing within the context of vocational guidance.

E.C. Webster: "An Experimental Approach to Vocational Guidance"

Webster described his study as an investigation of the possibilities of administering vocational guidance at the commencement of high school in the city of Montreal, and as a study of juvenile placement in relation to school training and the distribution of mental ability. More specifically, it involved a study of mental tests and questionnaires administered to representative grade eight classes. The objective was to investigate the relationship between measures of intelligence, standardized measures of achievement, special aptitudes, personality, and interests, and:

a) formal school training,

b) the proper basis for guidance with regard to the advisability

of continuing in school,

c) the choice of optional subjects,

d) the chances of an individual's success in various occupations, and

e) the choice of occupation by new entrants to the labor market.[28]

The study, then, was an attempt to correlate test results with differential vocational and educational success rates. To lend strength to his experimental approach, Webster cited several examples of successful work done in Germany, England, and the United States involving the use of psychological tests in vocational guidance.

A wide range of tests were administered, including: New Stanford Achievement Test, Advanced Examination; Otis Self-Administering Tests of Mental Ability; Minnesota Paper Form Board (special ability tests); questionnaires with respect to family background and work interests; a personality rating scale done by teachers.

The test results were used to investigate:

a) selective factors operating in the choice of a high school course,

b) differences in ability and achievement in various high school courses,

c) prognostic value of school marks and test scores, and

d) similarities and differences of a group of grade eight pupils compared with a group of unemployed boys.[29]

---

[28]E.C. Webster, "An Experimental Approach to Vocational Guidance" (unpublished Master's thesis, McGill University, 1933), p. 10.

[29]*Ibid.*, pp. 149-53.

Perhaps the third area was of most importance for the acceptance of testing within vocational guidance. Webster noted that: "A programme of scientific vocational guidance to be administered at the commencement of high school must be able to predict academic success."[30] It was found that prediction was most accurate when a combination of previous school marks and standardized test scores were used. Webster noted, however, that a great deal of further experimentation was needed.

He underlined his concern about the need for systematic vocational guidance by stating:

> Each child, on entering the secondary school, must select one of several courses of study. Evidence has been brought forward to show that these choices are often not made in a manner satisfactory to the child. Vocational guidance must, then, commence in Grade seven - just prior to the time when the pupil elects a high school course. In order that this may be done, a study of the characteristics of pupils entering various courses and of those successful in their high school careers had to be done.[31]

Webster made a strong case for vocational guidance, and for a central position for psychological testing within it. An even stronger emphasis was placed on testing in a thesis by H.J. Jackson in 1934.

H.J. Jackson: "Vocational Guidance"

Jackson considered a broader list of tests as relevant for guidance than Webster had incorporated into his study. He grouped the types of tests appropriate to vocational guidance under several headings:

---

[30] *Ibid.*, p. 52.

[31] *Ibid.*, p. 154.

a) Mental Ability or Intelligence Tests
b) Achievement Tests
c) Mechanical Aptitude Tests
d) Manual Dexterity Tests
e) Speed Tests
f) Power Tests
g) Character Analysis Tests
h) Trade Tests
i) Special Ability Tests
j) Diagnostic Tests
k) Prognostic Tests
l) Instructional Tests[32]

He also provided a list of prominent test publishers, which is reproduced in Appendix C.

Jackson relied heavily on psychological tests in his proposed vocational guidance program:

> So long as vocational counsel is given, the responsibility for encouraging a child in a given direction or discouraging him in another will be the counsellor's. Tests should be used to give him information, to supplement his opinion or the opinion of teachers, and to discover aptitudes or interests which ordinarily would not be found out in the classroom.[33]

From his point of view the most important single indicator was the intelligence test score. "No other single factor is so important in wordly success as intelligence. Some occupations require mechanical ability, some require moral qualities, but all require intelligence."[34]

Reflecting the current Ontario situation, Jackson stated:

> In order to classify pupils in occupational groups, tests are now available which make the task relatively simple. They are, however, very little used in Ontario, and when they are used, it is almost always at the teachers own expense. The result is that guidance in

---

[32]H.J. Jackson, "Vocational Guidance" (unpublished Master's thesis, McMaster University, 1934), pp. 25-30.

[33]Ibid., pp. 31-32.

[34]Ibid., p. 43.

> this province consists almost entirely of instruction regarding possible choices of occupation.[35]

A further indication of the importance which Jackson placed on testing is given in his proposed scheme for improving guidance in Ontario:

> Two factors will be apparent, viz., first, the emphasis on standardized tests and records as indispensible aids to successful guidance, and second, the loading of all the expensive machinery of the guidance program on the administrative unit best able to bear it - the province. Only a provincial or national organization could provide for the rapid dissemination of good ideas, and the necessary economy in carrying out the surveys suggested.[36]

Jackson's thesis represents one of the stronger positions in favor of psychological testing within the context of vocational guidance. It is indicative of two trends: a delineation of a specific context in which tests are appropriate, and a broadening of the types of tests considered relevant within the defined function.

Not all authors gave such a prominent place to tests in the emerging context of vocational guidance. In the years up to the time when provincial governments formalized a guidance function within their departments of education, psychological tests tended to become only one aspect of a total guidance program. Their use was also subject to increasing and continuous critical evaluation.

CRITICAL EVALUATION OF PSYCHOLOGICAL TESTS WITHIN VOCATIONAL GUIDANCE

The bulk of the criticism of test use within the context of

---

[35] Ibid., p. 41.

[36] Ibid., p. 47.

vocational guidance dealt with misapplication of testing techniques as it had done earlier within the context of education generally. Several authors compared the errors made previously in considering tests of intelligence as the answer to all teaching problems, with current mistakes being made in the overuse of psychological measures in classifying students for jobs. W. Line (1938) described an inadequate guidance program as one involving appraisal of a child's abilities and an analysis of occupations, with the objective of matching a child with a job. He suggested that neither personal aptitudes nor jobs are static enough to be amenable to this type of approach.[37] This opinion was supported by Walton (1938) who suggested that " . . . the best job for a boy or girl cannot be found from the results of a few artificial and superficial tests. The tests are important, but they are only one part of the whole procedure."[38]

A more basic criticism was voiced by W.E. Blatz with respect to the validity of intelligence tests. His views are summarized well by the final statement of his article. "The I.Q. is a valuable index, but it does not measure intelligence, unless you say it does, and even then it doesn't."[39]

This criticism indicates in an indirect way the trends in practices concerning testing in the late 1930's and early 1940's. The

---

[37]W. Line, "The Study of Individual Differences as a Basis of Guidance," Understanding the Child (October, 1937), 16-17.

[38]R.D. Walton, "Vocational Guidance in the Schools," Journal of Education (January, 1938), 50.

[39]W.E. Blatz, "Beyond the I.Q. Some Comments on 'Intelligence'," Understanding the Child (April, 1939), 5.

emphasis was definitely placed upon systematic vocational guidance, although publications such as the Jackson thesis indicate that, in practice, attempts at guidance were casual and sporadic. The criticisms also suggest a heavy and somewhat indiscriminate use of psychological tests in the approach to guidance.

VOCATIONAL GUIDANCE MODELS - M.D. PARMENTER

Several authors suggested guidance models involving a great deal more than testing programs. M.D. Parmenter presented one which appears to be representative. The program he suggested was in operation at Danforth Technical School. Activities were described as follows:

a) Students entering grade nine were given personal information questionnaires, group intelligence tests, and mechanical aptitude tests. Files containing pertinent information were kept for each student.

b) A course in occupations was offered.

c) Talks were given by teachers from different areas of specialization to acquaint students with activities involved in each.

d) Speakers from outside the school also supplied students with information.

e) Shop teachers included occupational information within their courses where appropriate to do so.

f) A bulletin board showing activities of graduates was put in a prominent place.

g) Individual counselling and testing was given when it seemed

necessary.

h) A placement service was provided for graduates.

i) There was a follow-up service to study the success or failure of graduates.[40]

In 1942 Parmenter was appointed to the staff of the Ontario College of Education and became involved in the establishment of the Vocational Guidance Center, an important organization in the distribution of vocational guidance materials including occupational information and psychological tests. The Ontario government had amended the High School Act to allow for the appointment of people to collect and distribute information with respect to occupations, and to advise pupils in planning educational and vocational advancement. The Center provided a co-ordinating influence for these activities.

Parmenter's model represents a trend in the early 1940's to consider guidance to be quite strictly vocational. Testing was given a place in nearly all models, and the type of tests suggested for use reflected the vocational emphasis.

C.P. O'Neil suggested that tests could be used to discover liabilities which require further diagnosis, latent possibilities seldom exposed, and disabilities which hinder students in certain activities. He cited a testing program which involved the use of an ability-to-learn test, and the Kuder Preference Record to provide a basis for an initial counselling interview.[41]

---

[40] M.D. Parmenter, "What We Do About Vocational Guidance," The School, XXIX (February, 1941), 560-561.

[41] C.P. O'Neil, "Guidance or Career Planning," The Canadian School Journal (May, 1944), 185.

In spite of the fact that interest and personality inventories were available, in practice heavy reliance was still placed on intelligence tests. H.P. Johns observed that in British Columbia, tests of mental ability and measures of achievement were in frequent use within the context of guidance. He also noted that little progress had been made in the use of aptitude tests, personality tests, and interest inventories.[42]

Several authors made similar observations, but of the people who evaluated the position of psychological tests within the context of vocational guidance, H.R. Beattie was perhaps the most widely read and accepted.

H.R. BEATTIE

H.R. Beattie held the positions of the Director of Vocational Guidance in London, Ontario, and Director of Career Planning in Hamilton, Ontario, prior to his appointment as Provincial Director of Guidance for Ontario.

He set up several models for guidance. The London program included:

a) teacher-counsellor specialists to keep cumulative records, administer and interpret tests, collect and distribute occupational information, perform the counselling function, work in the placement of pupils, and carry on follow-up

---

[42]H.P. Johns, "Guidance Services in B.C.," The School: Secondary Edition, XXXIII (April, 1945), 690.

studies, and

b) teachers to report to counsellors about individual students, perform some of the counselling services, and cultivate favorable attitudes with respect to guidance in pupils.[43]

Beattie provided a place for testing within his guidance models, but did not give it a position of central importance. In his inaugural address after his appointment as Ontario's Director of Guidance, he specifically stated:

> GUIDANCE IS NOT the administration of a few tests followed by blueprinting of a line of action for each student.
>
> GUIDANCE IS an effort on the part of the whole school to assist pupils to make intelligent choices that will lead to satisfactory adjustment both in school and after graduation.[44]

In several of his articles Beattie seemed to be attempting to promote guidance as a viable service, and he seemed to find it necessary to stress a controlled and diminished role for testing. He made the following statements with regard to tests:

a) Tests are a means of measuring some particular characteristic. This is only one factor to be considered in determining a course of action. No series of tests can predict success in an occupation.[45]

---

[43]H.R. Beattie, "A Plan for Vocational Guidance," The Canadian School Journal (January, 1942), 4.

[44]H.R. Beattie, "A Message to Ontario Teachers from the Provincial Director of Guidance," The School: Secondary Edition, XXXIII (September, 1944), 36.

[45]H.R. Beattie, "Guidance in Education," Canadian Welfare (March, 1945), 25.

b) The most important factor in administering tests is that their interpretation requires skill and experience. Tests are being introduced gradually into the guidance program as the training of teacher-counsellors continues.[46]

Beattie's views represented a trend towards:

a) a model for guidance broader than the strictly vocational one suggested by Parmenter,

b) a functionally subordinated role for psychological testing within this broadened guidance program, and

c) the recognition of the need for the controlled use of tests by those qualified to use them.

Articles in the 1940's from other parts of the country present views similar to those of Beattie. During this period provinces were defining the role of guidance as a formal function. This seemed to generate a great deal of interest in the exploration of the theoretical and practical limitations of psychological tests. R.W.B. Jackson provided a comprehensive summary which was a synthesis of views of several authors including Beattie, H.P. Johns from British Columbia, and T.M. Spencer from Saskatchewan. Jackson stated the following:

a) Tests are instruments useful for measuring a particular characteristic for a specific purpose, not useful for measuring all characteristics for all purposes.

b) The results of tests are always affected by errors in

---

[46]H.R. Beattie, "Guidance Services in Ontario," The School: Secondary Edition, XXXIII (June, 1945), 924.

measurement, but they give the most accurate measurement available at the time.

c) Tests do not always measure what they purport to measure. Their validity is open to question. This is especially true of personality and aptitude tests.

d) Great care in interpreting test results is necessary. The following factors must be considered:

   i) complexity of any situation involving a human being,

   ii) weakness of measuring instruments employed,

   iii) necessity of studying all possible factors affecting any given situation, and

   iv) the impossibility of ever attaining a perfect prediction.[47]

Another view which tended to further clarify and in some ways alter the prominence of testing within guidance was that suggested by S.R. Laycock.

S.R. LAYCOCK

The principles incorporated into the mental hygiene movement were foundational to Laycock's model for guidance. To him, guidance is a broad conception with a meaning close to that of education and having the following objectives: self-realization, satisfying human relationships, economic efficiency, and civic responsibility. He suggested that there are several types of guidance, including health guidance,

---

[47]R.W.B. Jackson, "The Use of Tests as Guidance Aids," The School: Secondary Edition, XXXII (February, 1944), 516.

educational or curricular guidance, recreational guidance, personal guidance, social guidance, and vocational guidance.[48]

Laycock suggested that some of the problems in the implementation of guidance lie with the people who are attempting to implement it. For these people he supplied three general guidelines:

a) Guidance is broader than vocational guidance.

b) Guidance cannot be separated from intellectual development. Stimulating a child to achieve his maximum growth and development should include the intellectual area.

c) One implication of guidance is that choice is possible. That choice must be made by the guided, not the guide.[49]

The steps which Laycock considered necessary in a guidance program were similar to those suggested by Beattie, but they implied a broader series of activities.

a) Pupil difficulties must be treated from the point of view of a diagnostician. The counsellor should use a case study approach including a service for self-analysis. This would include tests of general intelligence, aptitude tests, interest and attitude inventories, personality tests, and standardized tests in school subjects.

b) An information and discussion service is necessary to provide information about occupations and other requirements for

---

[48]S.R. Laycock, "The Teaching of Guidance in the High Schools," The B.C. Teacher (February, 1944), 175-176.

[49]S.R. Laycock, "Guidance in the Modern School," Bulletin: Saskatchewan Teachers Federation, VI (February, 1940), 29.

successful living.

c) Group guidance is necessary.

d) Provision should be made for an individual counselling service.

e) Follow-up work with graduates is necessary.

f) A research service should be implemented with a view to improving the guidance service.[50]

Laycock's approach to guidance held several implications for testing, including the following:

a) Since his model was broader in scope, it tended to diminish the importance of testing. He furthered the tendency to place psychological tests on a level equal to several other techniques useful to guidance.

b) Because Laycock's model implied a wider range of activities than previous models had done, it also provided the possibility of using a greater variety of tests.

He made several concrete suggestions concerning appropriate uses for psychological tests in many of his books and articles. His position is well summarized in a 1954 publication entitled Teaching and Learning. He grouped tests according to function and suggested uses for each type.

a) Intelligence Tests

Individual Tests

- The Revised Stanford Binet Scale of Intelligence

---

[50]S.R. Laycock, "The Teaching of Guidance in the High School," pp. 176-178.

- The Wechsler-Bellevue Intelligence Scale
- The Wechsler Intelligence Scale for Children
- The Porteus Maze Scale
- The Pintner-Paterson Performance Scale

Group Tests

- Laycock Mental Ability Test
- Dominion Group Test of Learning Capacity
- Otis Group Intelligence Scale
- American Council on Education Psychological Examination
- California Tests of Mental Maturity
- Pintner General Ability Tests
- S.R.A. Primary Mental Ability Tests

Laycock suggested uses for intelligence tests in:

i) grouping for instruction as a result of identifying gifted and below average children,

ii) vocational guidance to the extent of suggesting classes of occupations which would seem appropriate or inappropriate, and

iii) research and experimentation in which intelligence seems to be a factor.[51]

b) Aptitude Tests

Laycock did not list any specific tests, but did make

---

[51] S.R. Laycock, Teaching and Learning (Toronto: Copp Clarke Co. Limited, 1954), p. 59.

general mention of tests of mechanical, clerical, musical, legal, and mining aptitudes. He suggested difficulty in applying these aptitude tests because of the fact that research had not yet provided a clear conception of human ability:

It is doubtful if tests of aptitude, as at present developed, are of great value to the classroom teacher. In the case of guidance departments, each would have to decide whether a given test adds sufficiently reliable data to the understanding of a child to warrant its use. Further research is greatly needed.[52]

c) Interest Inventories

- Kuder Preference Record
- Strong Vocational Interest Blank

Aside from the actual scores obtained in such inventories as the Kuder and the Strong, their use may be of help to pupils in analysing their interests and in arriving at a choice which is at least based on a variety of indicators.[53]

d) Personality Inventories and Rating Scales

Rating Scale

- Haggerty-Olson-Wideman Behavior Rating Schedules

Personality Inventories

- The Bernreuter Personality Inventory
- The Bell Adjustment Inventory
- The California Tests of Personality

The obvious disadvantage of self-rating scales is that pupils and other individuals vary in their capacity for insight into their own feelings as well as in their willingness to reveal these to

---

[52] Ibid., p. 62.

[53] Ibid., p. 69.

others. Some guidance counsellors make use of them partly as teaching devices and discuss the items one by one after the pupils have rated themselves.[54]

e) Sociometric Tests

Laycock did not list any specific tests, but described some used for this technique as it relates to guidance:

The technique provides an analysis of each individual's status in the group with respect to a given criterion. The results often throw light on the factors lying behind the "emotional climate" of a class and may help explain discipline problems. In addition they may reveal that certain pupils need help in their personal and social adjustments.[55]

f) Standard Tests of Educational Achievement

- Stanford Achievement Tests
- Dominion Achievement and Diagnostic Tests
- Gates Reading Tests
- Iowa Silent Reading Tests
- Metropolitan Readiness Test

The chief use of standardized achievement tests in schools is that of the guidance of individual pupils. Test results may assist teachers to diagnose each pupil's strengths and weaknesses. Such diagnosis is necessary in planning teaching procedures and remedial instruction. It may also be of value in counselling a pupil with respect to both his educational and vocational plans. Achievement tests have also been used in grouping of pupils for instruction, and as a measure of the degree to which a student is achieving in relation to his capacity.[56]

The list of psychological tests and the suggested uses as outlined

---

[54] Ibid., p. 70.

[55] Ibid., p. 71.

[56] Ibid., p. 72.

by Laycock are similar to those given by several authors in the late 1940's and early 1950's. His views concerning guidance also appear to be quite representative.

PROVINCIAL GUIDANCE MODELS

Most provinces adopted a model similar to the one developed by Beattie, as expanded by Laycock. For example, in Alberta the following duties were suggested for A.A. Aldridge, the new director of guidance, in 1947:

a) To assist local districts and divisions to set up guidance services;

b) To secure and/or prepare information on occupations both within and outside the province, to keep this information up to date, and to arrange for its distribution;

c) To organize and administer a test service which would make available to guidance personnel suitable test material, and to provide for suitable provincial norms;

d) To promote the training of guidance personnel through in-service training and through the arrangement for suitable courses in summer school and in university winter sessions;

e) To study standards for guidance work and to supervise workers in the performance of their functions;

f) To organize Guidance Clinics for the demonstration of the best guidance techniques;

g) To devise cumulative and transfer record forms suitable for recording and preserving such information as may be in the interests of the pupils; and

h) to keep such office records as are necessary.[57]

Department of Education annual reports from other Canadian provinces such as British Columbia[58] and Nova Scotia[59] outlined similar duties for their provincial directors. Later reports indicate that the objectives for psychological testing within guidance programs have in many ways remained unchanged since the 1940's.[60] Most activity has been directed towards bringing practices into line with stated objectives.[61] This is well illustrated in the Alberta situation by the comments of A.A. Aldridge in a review of the progress made in guidance from the time of formalization to 1963. Concerning psychological tests, he made the following statements:

> Standardized tests are an essential tool of the guidance program and certain types seem to be more appropriate than others. Such tests provide an excellent means of assisting teachers in gathering information for specific purposes. The counsellor must also have some indication about academic capacity of those whom he counsels. The cumulative record gives him the story of the student's past

---

[57]A.A. Aldridge, "Guidance in Alberta High Schools," (unpublished paper, Alberta Department of Education, 1956), p. 1.

[58]British Columbia, Department of Education, Annual Report: 1944-45 (Victoria: King's Printer, 1946), pp. 147-148.

[59]Nova Scotia, Department of Education, Annual Report for the Year Ended July 31, 1946 (Halifax: King's Printer, 1947), pp. 120-125.

[60]Nova Scotia, Department of Education, Annual Report for the Year Ended July 31, 1957 (Halifax: Queen's Printer, 1958), p. 104; see also Ontario, Department of Education, Report of the Minister: 1964 (Toronto: Queen's Printer, 1964), p. 19.

[61]Manitoba, Department of Education, Annual Report for the Year Ending July 30, 1967 (Winnipeg: Queen's Printer, 1967), pp. 28-29; see also Nova Scotia, Department of Education, Annual Report for the Year Ended July 31, 1958 (Halifax: Queen's Printer, 1959), p. 29.

> successes and scores of previously given tests of academic aptitude or intelligence. He may want to test further for some degree of confirmation. He will also wish to obtain some indication of the student's interests and aptitudes. Standardized tests, used properly, with recognition of their limitations, can be a helpful tool. Areas in which they are generally being used therefore include achievement, intelligence, interest, and aptitudes. The Guidance Branch has never supported the use of personality tests, particularly group tests of a pencil and paper nature. The work of the Research Branch has been invaluable, especially in the development of local and provincial norms. The research on the examinations in Grades IX and XII has added much understanding to an appreciation of the role, function, and best use of the external examination.[62]

Among the tests suggested by Aldridge to have a place within guidance are standardized tests of achievement. Most other Canadian writers cited in the study have also made reference to these tests. Provincial departmental examinations were among the earliest achievement tests to be used for guidance purposes. Because of the number of years which they have been used and the large number of students to whom they have been given, these provincial achievement tests are considered in a separate section.

USE OF PROVINCIAL DEPARTMENTAL EXAMINATIONS

A survey of annual reports concerning education indicates that academic achievement tests developed by departments of education have been administered in some provinces since the beginning of the century. They have been used in various grades to evaluate provincial achievement levels and to set standards for pupil promotion.[63] The reports also

---

[62] A.A. Aldridge, "A Review of Guidance in Alberta: 1947-1963" (unpublished paper, Alberta Department of Education, 1963), p. 4.

[63] British Columbia, Department of Education, Annual Report: 1935-36 (Victoria: King's Printer, 1936), p. 24; see also Manitoba, Department of Education, Annual Report for the Year Ending June 30, 1936 (Winnipeg: King's Printer, 1936), p. 23.

indicate that provincial departmental examinations have played an important role within guidance in Canadian education. Their results have often been used as the sole source of information in determining a child's educational future.[64] An excellent example of this kind of use is given in an Alberta study by MacArthur and Hunka.[65]

More recent provincial reports from Ontario (1964),[66] Nova Scotia (1969),[67] and Alberta (1969)[68] suggest a tendency to discontinue the use of departmental examinations in some grades, and in other grades, to use their results along with other information in making decisions about pupil promotion. The trend would seem to indicate a change in the role of the tests from providing rigid standards to providing tentative guidelines useful to a guidance worker and a student in making decisions with respect to the student's educational future.[69] Other trends which are of current importance to testing within guidance are considered in

---

[64]Manitoba, Department of Education, Annual Report for the Year Ending June 30, 1963 (Winnipeg: Queen's Printer, 1963), p. 54; see also Ontario, Department of Education, Report of the Minister: 1960 (Toronto: Queen's Printer, 1960), p. 3.

[65]R.S. MacArthur and S. Hunka, School Examination Practices and Standards in Alberta (Edmonton: University Press, 1960), pp. 3-19.

[66]Ontario, Department of Education, Report of the Minister: 1964 (Toronto: Queen's Printer, 1964), pp. 7-8.

[67]Nova Scotia, Department of Education, Annual Report for the Year Ended July 31, 1969 (Halifax: Queen's Printer, 1969), p. 29.

[68]Alberta, Department of Education, Annual Report: 1969 (Edmonton: Queen's Printer, 1970), p. 68.

[69]H.W. Zingle, C. Safran, and A.E. Hohol, Decision Making (Toronto: Holt, Rinehart and Winston of Canada, 1968), pp. 29-36.

chapter four of the thesis.

INFLUENCE OF THE UNITED STATES

One aspect of this study not yet considered directly is the influence of the activities in the United States upon developments in Canada. It is a basic assumption of this paper that the influence has been continuous and important on several different levels.

a) Initially, the work done by men such as those considered in chapter two provided a frame of reference for later Canadian developments. The directness of the influence for psychological testing in Canada has varied greatly. Parsons, Beers, and others helped to crystallize opinion concerning the need for work in education which involved testing. Men like E.L. Thorndike were more direct in their influence through constructing and classifying several tests, and through working directly with Canadian educators who studied under them.

b) A very direct form of influence lies in the fact that most tests used in Canada are American made. This is evident historically in the list of tests given by several of the educators discussed in this chapter. Canadian tests were and are the exception rather than the rule.

c) Today the influence continues in several obvious ways, including Canadians studying in the United States, American educators working in Canada, and continued use of American tests, text books, and periodicals.

SUMMARY OF CANADIAN DEVELOPMENTS

The purpose of this chapter has been to examine some Canadian developments related to the use of psychological tests within the context of guidance.

The initial use of these tests appeared to be in the investigation of problems occurring within education generally. The early mental hygiene studies and the Putman-Weir survey contain examples of uses within this general context. Later, writings by people such as Sandiford suggested a role for tests within the context of vocational guidance. By the 1940's this context had been expanded by educators like Beattie and Laycock to include activities more directly related to personal guidance. At the time when provinces were creating formal guidance departments, psychological testing was being described as one of several techniques useful to the broadened guidance function.

Chapter 4

CURRENT TRENDS

Current writings concerning psychological testing within the context of guidance tend to reflect certain central themes. Some of these will be examined in view of historical developments and contemporary influences.

Several writers have summarized popular concerns regarding guidance and psychological testing. The task of this author was to select certain major themes in current literature relating to the use of psychological tests within guidance. Difficulty was encountered in making decisions as to which themes were important enough to include in the chapter. Final decisions were made on the basis of the number of publications found relating to certain topics. The articles finally selected for the discussion of a certain theme are the ones which appear to the author to be the most representative.

The popular concerns which seem to have the most relevance have been grouped into five areas.

EMPHASIS ON GUIDANCE IN ELEMENTARY SCHOOLS

Nevison (1967) suggests that elementary schools:

> . . . should have counselors to discover those children with perceptual difficulties, cerebral dysfunctioning and retarded development who are not ready to tackle the tasks of reading and writing, to diagnose learning difficulties, to identify talents, to initiate help for the emotionally damaged - instead we expect teachers with a year or two of university or normal school and

responsible for thirty or forty children to perform such complex functions.[1]

The statement implies a guidance model involving various psychological tests, administered and interpreted by specialists. The objectives outlined by Nelson and Frey (1969) for testing within guidance appear to satisfy both of these requirements:

> One goal is concerned with the collection of data for the identification of children who, because of some dysfunction, cannot easily enter into normal activities. The second goal is for assessment procedures to serve as a means of data collection for use in a program of positive developmental counseling directed towards the achievement of personal adequacy and effectiveness through self-knowledge.[2]

The use of tests within this model would:

> . . . maximize personal contact and result in the generation of tentative hypotheses about the child. Since counseling and consulting activities form the hub of the guidance program, testing and appraisal become supportive of, rather than residing beside child guidance as separate guidance functions.[3]

The statements appear to indicate an integrative approach to elementary guidance involving specialists from testing and various other fields. Also implied is a more careful application of tests and more meaningful use of their results.

ROLE DELINEATION WITHIN GUIDANCE

Several authors have written of the need for a concrete

---

[1]Myrne B. Nevison, "The Canadian Counselor," Canadian Counsellor, I (June, 1967), 40.

[2]R.C. Nelson and D.H. Frey, "Elementary School Counselor and Testing," Elementary School Guidance and Counselling, IV (October, 1969), 60.

[3]Ibid., p. 62.

definition of the functions of various workers in guidance:

> Counselors are being criticized by other professions for their superficiality and ambiguous role; they are being dispossessed of their domains; they are preoccupied with old issues about counseling versus psychotherapy, referral, supervision, and function. They feel threatened by a variety of persons who perform low level helping functions and call themselves counselors.[4]

Attempts to reduce the ambiguity of the role of the guidance worker have resulted in several articles regarding specific and appropriate activities. Parmenter (1968) and Storey (1969), among others, deal with the importance of clear communication of expected activities to facilitate a co-operative system of skills and services.

The implication of this concern for psychological measurement lies in the fact that it focuses on the need for specially trained personnel to conduct a testing program.

RENAISSANCE OF VOCATIONAL GUIDANCE

Studies tend to indicate that vocational guidance came to be viewed as a discouraging and low-status activity in the 1960's:

> An increased awareness by guidance workers of the complex nature and multiple determinants of career development perhaps has been discouraging and not conducive to further developments or practice in this area. It is no longer adequate to test abilities, aptitudes, interests, and achievement and to relate them to perceived job requirements. Guidance workers increasingly recognize the roles of attitudes, motivation, social pressures, and self-concept in career development. Such factors are less readily assessed.[5]

---

[4]Lawrence M. Brammer, "The Counselor is a Psychologist," The School Guidance Worker, XXIV (April, 1969), 2.

[5]Arthur M. Kroll, "Essential Foundations for Career Guidance," The School Guidance Worker, XXIX (February, 1969), 7.

Bedal (1969) has suggested a renewed interest in vocational guidance in response to increased needs for it, and as a result of new technological advances which make it easier to perform:

> The interest in vocational counseling has - like many other educational concepts today - gone full cycle since Parsons' day. The model has changed - and the need for vocational guidance services has mushroomed. Technology has operated in such a way as to create a greater need for these services and at the same time has brought with it the means to help the counselor meet these increased needs. Computer-based systems of vocational information, new group guidance procedures, better vocational guidance materials, enthusiastic workers, and well trained para-professional workers will all assist in meeting the need which is so vital to those we serve.[6]

The renewed interest in vocational guidance has at least two general implications for testing. It will cause a re-examination of the role of testing within vocational guidance, and it will help to advance new measurement procedures. One of these new procedures involves the use of computer-based systems of guidance which implies both a new way of obtaining information, and a new way to utilize it.

COMPUTER SYSTEMS IN GUIDANCE

At present computers are used chiefly in the dissemination of occupational information, but future suggested possibilities include the replacement of counselors with computer systems.

The use which may ultimately have the most relevance for testing is explained in an article by Samler (1969). An experiment was conducted in which a computer replaced a counselor in an interview situation.

With much information on pupils in memory, and prediction (or

---

[6]Carl L. Bedal, "The Renaissance of Vocational Guidance," Canadian Counsellor, III (October, 1969), 32.

> experience) tables built in, the computer is supplied with information on curricular offerings, a set of instructions and rules for deciding what to say to pupils and for determining what to report to counselors, and a repertoire of statements which the computer can make to the client . . . .[7]

This type of system represents a new standardized testing situation, which would appear to have some advantages over the old paper and pencil type tests.

a) The computer could be programmed to handle a greater variety of interests, abilities, etc., than a single test.

b) It could provide immediate feedback regarding emerging patterns of interests and abilities, according to readily adjusted norms.

c) It could also provide a more consistent standardized interpretation of obtained data than an individual counselor would be able to do.

The importance of computers for future work in guidance is reflected in the fact that an entire issue of The Personnel and Guidance Journal (1970) was devoted to technology in guidance.

It is interesting to note that many of the same ideas expressed historically in evaluating testing techniques are being applied to the use of computers. Dworkin (1970) summarized the problems involved as follows:

a) Computers cannot deal with personal problems or individual idiosyncracies of students.

---

[7]Joseph Samler, "Vocational Counseling: A Pattern and a Projection," The School Guidance Worker, XXV (December, 1969), 5.

b) Computers are still in their infancy with respect to their application to guidance.

c) Computer programs standardized by national companies may be as inappropriate for local use as are psychological tests which are not correctly normed.

d) Most counselors are not prepared technologically to make use of computers.[8]

Experimental evidence of some of the advantages and disadvantages of computer use is found in an article by Romaniuk and Maguire (1970). The performance of school counselors in conducting educational planning interviews was compared to the performance of a computer. The results, as they relate to student reaction, tend to show that the computer could play a valuable role in transmitting much of the information currently given by the guidance counselor. The results also show, however, that work must be done to overcome some of the revealed drawbacks. These include lack of confidence in the computer on the part of the students, and the negative reactions of students to the lack of human contact during a computer interview.[9]

The exact role of computers within the guidance model is still a matter for discussion. However, they do provide a new and perhaps more accurate way to obtain an objective standardized assessment of a sample

---

[8]Edward P. Dworkin, "Beware of False Gods," The Personnel and Guidance Journal, XLIX (November, 1970), 242-244.

[9]E.W. Romaniuk and T.O. Maguire, "Computer Assisted Guidance," Canadian Counsellor, IV, 3 (June, 1970), 150.

of behavior to detect differences between individuals or between the reactions of the same individual on different occasions.

CONCERN ABOUT EFFECTIVENESS OF GUIDANCE PROCEDURES

"A survey of the literature on the counseling process and on counseling effectiveness is discouraging - we seem to have no definitive answers. Evidence appears both contradictory and inclusive."[10]

Truax has stated that one-third of trained counselors are destructive in their influence, another third are helpful, and the remaining third have insignificant influence.[11] He (1970)[12] and others such as Carkhuff[13] have attempted to construct scales to gauge the effectiveness of certain counseling procedures. These activities imply two emerging roles for standardized scales of measurement, both of which shift the focus from sampling clients' behavior to sampling counselors' behavior:

a) to determine which characteristics are most likely to produce successful counselors, and

b) to evaluate counselor approaches to clients during interviews.

---

[10]Nevison, "The Canadian Counselor," p. 40.

[11]C.B. Truax and R.R. Carkhuff, Towards Effective Counseling and Psychotherapy: Training and Practice (Chicago: Aldine Publishing Company, 1967), p. 21.

[12]C.B. Truax and J.L. Lister, "The Effects of Counselor Accurate Empathy and Non-Possessive Warmth upon Client Vocational Rehabilitation Progress," Canadian Counsellor, IV, 4 (October, 1970), 229-232.

[13]R.R. Carkhuff, Helping and Human Relationships: Selection and Training (New York: Holt, Rinehart, and Winston, Inc., 1969).

This final concern is different in kind from the others in its application to guidance in that the primary focus is on evaluation of the guidance worker rather than the client. It reflects a growing concern of counselor educators with respect to the accountability of their procedures.

SUMMARY OF CURRENT TRENDS

The writings discussed in this chapter would tend to indicate a future for a form of psychological testing within guidance at all levels of education, carried on by a co-operating group of specialists using all of the technological aids available. The literature also suggests that a cycle has occurred in which measurement techniques were applied, critically evaluated, and improved. It would appear that in many ways mere extensions of the old methods are no longer regarded as being adequate. A new beginning has been reached.

Research conducted in order to develop new procedures is, however, subject to criticisms, as was research conducted by Cattell, Thorndike, Sandiford, Beattie, Laycock, etc. This criticism has probably been the most strikingly consistent aspect of the application of psychological tests. Therefore, a summary of current critical concerns appears to be relevant at this point:

a) Most tests are being validated and their uses being recommended on the basis of predictive studies. Very few experimental investigations are reported in which tests are validated by emperical data.

b) The definition of the behavior a given test is developed to measure is frequently vague, including no mention of the assumptions regarding such matters as the nature of individual functioning, the environmental interaction involved, and the social motivation

anticipated, together with the means by which relevant influences are controlled.

c) Studies are commonly made of test uses without clarifying the educational purposes which they are expected to serve, and without identifying the kinds of adaptation of procedures and instrumentations required for different purposes.

d) Although the very possibility of testing human behavior assumes some degree of transfer or generalization enabling the organism to cope with situations not wholly identical with those encountered earlier, very little current research seeks to identify the nature and extent of transfer or generalization characteristic of behavior measured by various tests.[14]

The five areas of current major interest concerning psychological testing in guidance, along with the list of criticisms related to test use, were included in the thesis for several reasons:

a) A study of current areas of interest would seem to be the logical point at which to end a discussion of major concerns of the past.

b) To the extent that current happenings are better understood with the benefit of an historical perspective, the presentation of historical and modern points of view in the same study would seem justified.

c) More specifically, the inclusion of this chapter provided opportunity to compare earlier happenings with current ones for the purpose of noting similarities and differences among them.

The fact that five areas of concern were chosen is perhaps open

---

[14]Ralph W. Tyler, "Critique of the Issue on Educational and Psychological Testing," Review of Educational Research, XXXVIII (February, 1968), 106.

to question. Depending upon his orientation, another author may have selected a shorter or longer list, or one differing in content. The list chosen by this author seems justified in that it appears to be representative of current writings regarding the use of psychological tests in guidance.

Chapter 5

SUMMARY

The general objective of this thesis is to study the foundations of measurement within guidance in Canadian education. In order to achieve this objective, the author selected two general areas for examination:

a) the historical origins of the concept of measurement within the context of guidance in education, and

b) the evolution of attitudes concerning the role of measurement within the context of guidance.

DEVELOPMENTS IN EUROPE AND THE UNITED STATES

A survey of the literature revealed that much of the earliest work pertinent to measurement was done in Europe and the United States. This work was relevant to a discussion of the first general area of interest mentioned above. The developments considered can be summarized under the following four headings:

a) Initial development of psychological tests

The existence of psychological tests presupposes a recognition of the possibility of measuring individual differences in human behavior. Work done in Europe by people such as Galton, Wundt, and Binet appears to have been important in bringing about this recognition in that:

i) their work represents important early attempts at

measuring individual differences in intelligence, and

ii) they influenced developments in North America in several ways. Cattell studied with both Galton and Wundt, and their influence is apparent in much of his work. Binet's influence is also obvious in that his intelligence scale was translated in the United States in 1910, and used by Goddard.

b) Refinements in measures of intelligence

Through their application and revision of Binet's scale, Goddard and Terman helped to make intelligence tests widely used and accepted in the U.S.A. The development of group measures during World War I made possible the widespread use of intelligence tests in education.

c) Test use within the context of education

Work done by people such as James and Hall promoted the objective study of education, which arose out of concern for the student in the educative process. Some of the earliest investigations involved curricula. As a result, several achievement tests were constructed to determine whether or not stated objectives were being attained. Men prominent in this area were Rice and E.L. Thorndike. Other investigations involved the use of intelligence tests, usually to detect feebleminded students.

These activities tend to represent the development of an attitude favorable to test use within the context of

education, as well as a growing concern for the satisfactory adjustment of students.

d) Measurement within the context of guidance

Beers and Parsons helped to crystallize concerns of educators into specific discussions of mental health within a context of guidance. Parsons' work, particularly, also helped to develop a role for psychological tests within the vocational aspect of a total guidance program. The result was the emergence of tests of achievement, intelligence, interest, and personality to facilitate the attainment of the objectives of the new guidance function. Several of these tests were classified and explained in terms of their role within guidance by E.L. Thorndike.

The European and American developments just considered were included in the study in an attempt to investigate some of the historical origins of measurement within the context of guidance in education.

There is evidence to suggest that the issues discussed to this point were of relevance to events which occurred later in Canada. Two important areas of influence, particularly from the United States, included the close association of Canadian and American educators, and extensive Canadian use of American-made tests.

DEVELOPMENTS IN CANADA

The second area of major interest to the subject of the thesis is the study of the evolution of attitudes concerning the role of measurement within guidance in Canada. Certain developments appear to be

of primary importance to later events. These developments have been grouped into three general areas for purposes of summarization.

a) Initial use of psychological tests in Canada

A large proportion of the testing in the 1920's was done by people concerned about education, but not directly involved in the educative process. For example, members of the Canadian National Committee for Mental Hygiene conducted surveys using tests of intelligence to detect feebleminded children.

Writings from the 1920's suggest that psychological tests were used sparsely in schools at that time. Although Sandiford and others promoted use of intelligence tests for vocational guidance, they were employed mostly for detection of feebleminded students, and for ability grouping in the classroom.

b) Early surveys and theses

Surveys and theses by Putman and Weir, Lazerte, Webster, and Jackson in the 1920's and 1930's tend to reflect a change in the types of problems to which psychological tests were applied. The trend in test use appears to have involved:

i) an increased use of psychological tests within the context of vocational guidance, rather than within a context of education generally, and

ii) an increased reliance by educators upon intelligence and interest tests in carrying out vocational guidance.

c) Changes in the role of tests within an evolving concept of guidance

In the 1930's and 1940's several Canadian educators including Parmenter, Beattie, and Laycock, suggested models for guidance. Considered respectively the models which they suggested tend to represent a decreasing emphasis upon vocational guidance. Laycock's model included vocational guidance within a broad series of activities which tended to encompass all aspects of education. The effect of this expanded model upon the use of psychological tests appears to have been twofold.

i) Since Laycock's model was broader in scope, it tended to diminish the singular importance of psychological testing. Laycock included psychological testing in a series of other techniques considered useful in fulfilling the objectives of guidance.

ii) Because Laycock's model implied a wider range of activities than the previous vocational guidance models had done, it provided the possibility of using a greater variety of types of tests.

Laycock's model for guidance is very similar to the models adopted by several provincial governments for their newly created guidance departments in the 1940's.

In summary, psychological testing from the early 1900's to the 1940's tended to evolve from a place within education generally, to a prominent position within vocational guidance, to a diminished role

within an expanded guidance model.

CURRENT TRENDS

The author decided that a logical end to the study of the foundations of measurement was the consideration of some issues important to psychological testing in guidance currently. Themes of significance to testing within the context of guidance were grouped into the following areas:

a) Emphasis on guidance in elementary schools

b) Concern about role delineation within guidance

c) Renaissance of vocational guidance

d) Computer systems in guidance

e) Concern about the effectiveness of guidance procedures.

A survey of the literature concerning the above areas tends to indicate a future for a form of psychological testing within guidance, at all levels of education, carried out by a co-operating group of specialists, using a series of new technological aids such as computers.

BIBLIOGRAPHY

A. BOOKS

Anastasi, Anne. Psychological Testing. New York: The Macmillan Company, 1968.

Beers, Clifford W. A Mind that Found Itself. Garden City, New York: Doubleday Company Inc., 1950.

Binet, Alfred. The Development of Intelligence in Children. Baltimore: Williams and Wilkins Company, 1916.

Boring, Edwin G. A History of Experimental Psychology. New York: The Century Company, 1929.

Brewer, John M. Education as Guidance. New York: The Macmillan Company, 1932.

_____. History of Vocational Guidance. New York: Harper and Brothers, 1945.

Carkhuff, R.R. Helping and Human Relationships: Selection and Training. New York: Holt, Rinehart, and Winston, Inc., 1969.

Downing, Lester N. Guidance and Counseling Services: An Introduction. New York: McGraw-Hill, Inc., 1958.

Galton, Francis. Hereditary Genius. Cleveland: Meridian Books, 1962.

_____. Inquiries into Human Faculty and its Development. London: The Macmillan Company, 1951.

Goodenough, F.L. Mental Testing. New York: Rinehart and Company, Inc., 1949.

Groves, E.R., and Phyllis Blanchard. Introduction to Mental Hygiene. New York: Henry Holt and Company, 1930.

Hutson, P.W. The Guidance Function in Education. New York: Appleton-Century-Crofts, Inc., 1958.

Koos, L.V., and G.N. Kefauver. Guidance in Secondary Schools. New York: The Macmillan Company, 1932.

Laycock, S.R. Teaching and Learning. Toronto: Copp Clarke Co. Limited, 1954.

Linden, K.W., and J.D. Linden. Modern Mental Measurement: A Historical Perspective. Boston: Houghton Mifflin Company, 1968.

MacArthur, R.S., and S. Hunka. School Examination Practices and Standards in Alberta. Edmonton: University Press, 1960.

Parsons, Frank. Choosing a Vocation. New York: Agathon Press, Inc., 1967.

Peterson, Joseph. Early Conceptions and Tests of Intelligence. New York: World Book Company, 1925.

Putman, J.H., and G.M. Weir. Survey of the School System. Victoria: King's Printer, 1925.

Reisman, J.M. The Development of Clinical Psychology. New York: Appleton-Century-Crofts, 1966.

Sandiford, Peter. Educational Psychology. London: Longmans, Green and Company, 1928.

_____. Foundations of Educational Psychology. New York: Longmans, Green and Company, 1938.

_____. Mental and Physical Life of School Children. London: Longmans, Green and Company, 1913.

Shafer, R.J. A Guide to Historical Method. Illinois: The Dorsey Press, 1969.

Shertzer, B., and S.C. Stone. Fundamentals of Guidance. Boston: Houghton Mifflin Company, 1966.

Smith, H., and others. A Bibliography of Canadian Education. Toronto: University of Toronto Press, 1938.

Thorndike, E.L. Educational Psychology. New York: Teachers College, Columbia University, 1921.

_____. Elementary Principles of Education. New York: The Macmillan Company, 1929.

_____. An Introduction to the Theory of Mental and Social Measurements. 2d ed. New York: Teachers College, Columbia University, 1913.

Thorndike, R.L., and E. Hagen. Measurement and Evaluation in Psychology and Education. New York: John Wiley and Sons, Inc., 1965.

Traxler, A.E. Techniques of Guidance. New York: Harper and Brothers, 1945.

Truax, C.B., and R.R. Carkhuff. Towards Effective Counseling and Psychotherapy: Training and Practice. Chicago: Aldine Publishing Company, 1967.

Wilds, E.H., and K.V. Lottich. The Foundations of Modern Education. New York: Holt-Rinehart and Winston, 1964.

Williamson, E.G. Vocational Counseling. New York: McGraw-Hill, Inc., 1965.

Zaccaria, J.S. Approaches to Guidance in Contemporary Education. Scranton, Pennsylvania: The Haddon Craftsmen, Inc., 1969.

Zingle, H.W., C. Safran, and A.E. Hohol. Decision Making. Toronto: Holt, Rinehart and Winston of Canada, Limited, 1968.

B. PERIODICALS

Beattie, H.R. "Guidance in Education," Canadian Welfare, (March, 1945), 24-29.

_____. "Guidance Services in Ontario," The School: Secondary Edition, XXXIII, 10 (June, 1945), 923-925.

_____. "A Message to Ontario Teachers from the Provincial Director of Guidance," The School: Secondary Edition, XXXIII, 1 (September, 1944), 36-37.

_____. "A Plan for Vocational Guidance," The Canadian School Journal, (January, 1942), 4-7, 24.

Bedal, Carl L. "The Renaissance of Vocational Guidance," Canadian Counsellor, III (October, 1969), 26-32.

Blatz, W.E. "Beyond the I.Q. Some Comments on 'Intelligence'," Understanding the Child, (April, 1939), 4-5.

Brammer, Lawrence M. "The Counselor is a Psychologist," The School Guidance Worker, XXIV (April, 1969), 1-11.

Brison, Dr. Eliza. "The Training of Sub-Normal Children," The Public Health Journal, XIII, 8 (August, 1922), 345-353.

Burnette, N.L. "Mental Defect and Social Hygiene," The Public Health Journal, XIII, 2 (February, 1922), 69-75.

Clarke, E.K. "Survey of Toronto Public Schools," Canadian Journal of Mental Hygiene, II, 2 (July, 1920), 182-185.

Dauphinee, A.J. "Vancouver's Sub-Normal Problem," Canadian Journal of Mental Hygiene, III, 1 (1921), 117-124.

Dunn, Dr. D.J. "Mental Hygiene Activities in the Public Schools," The Public Health Journal, XV, 2 (February, 1924), 55-67.

Dworkin, Edward P. "Beware of False Gods," The Personnel and Guidance Journal, XLIX (November, 1970), 242-244.

Fraser, C.G. "Feebleminded and the Public Schools," The Public Health Journal, VII, 5 (May, 1916), 237-238.

Hincks, C.M. "Mentally Deficient Children," The Public Health Journal, IX, 3 (March, 1918), 102-105.

Jackson, R.W.B. "The Use of Tests as Guidance Aids," The School: Secondary Edition, XXXII, 6 (February, 1944), 515-516.

Johns, H.P. "Guidance Services in B.C.," The School: Secondary Edition, XXXIII, 8 (April, 1945), 688-691.

Johnstone, E.R. "Waste Humanity," The Public Health Journal, V, 4 (April, 1914), 209-211.

Kellogg, C.E. "Mental Tests and Their Uses," Dalhousie Review, II (1923), 490-500.

Kroll, A.M. "Essential Foundations for Career Guidance," The School Guidance Worker, XXIX (February, 1969), 1-10.

Laycock, S.R. "Guidance in the Modern School," Bulletin: Saskatchewan Teachers Federation, VI, 1 (February, 1940), 28-30.

_____. "The Teaching of Guidance in the High School," The B.C. Teacher, (February, 1944), 175-179.

Line, W. "The Study of Individual Differences as a Basis of Guidance," Understanding the Child, (October, 1937), 14-17, 32.

MacPhee, E.D. "Research on Mental Hygiene," The Public Health Journal, XIV, 8 (August, 1923), 339-346.

"Mental Hygiene Survey of the Province of British Columbia," Canadian Journal of Mental Hygiene, II, 2 (April, 1920).

"Mental Hygiene Survey of the Province of Saskatchewan," Canadian Journal of Mental Hygiene, III, 2 (June, 1920).

Mundie, G.S., and B. Silverman. "The Child Guidance Clinic," The Public Health Journal, XV, 10 (October, 1924), 441-451.

Nelson, R.C., and D.H. Frey. "Elementary School Counselor and Testing," Elementary School Guidance and Counseling, IV (October, 1969), 39-48.

Nevison, M.B. "The Canadian Counselor," Canadian Counsellor, I (June, 1967), 39-48.

O'Neil, C.P. "Guidance or Career Planning," The Canadian School Journal, (May, 1944), 184-187, 204.

Parmenter, M.D. "What We Do About Vocational Guidance," The School: Secondary Edition, XXIX, 6 (February, 1941), 560-561.

_____. "Who Should Do What in the School Guidance Program," The School Guidance Worker, XXIV (October, 1968), 18-26.

Pratt, E.J. "The Application of the Binet-Simon Tests to a Toronto Public School," Canadian Journal of Mental Hygiene, III, 1 (1921), 95-105.

Rogers, A.L. "The Message of Educational Psychology to Parents and Teachers," Canadian Journal of Mental Hygiene, II, 1 (1920), 60-72.

Romaniuk, E.W., and T.O. Maguire. "Computer Assisted Guidance," Canadian Counsellor, IV, 3 (June, 1970), 149-160.

Samler, Joseph. "Vocational Counseling: A Pattern and a Projection," The School Guidance Worker, XXV (December, 1969), 1-19.

Sandiford, Peter. "A Bibliography of Intelligence and Educational Tests," The School, XVI (December, 1927) (April, 1928).

Storey, Arthur G., and others. "The Counselor's Role as Perceived by Counselor, Teacher, and Counsellee," Canadian Counsellor, III (June, 1969), 49-53.

"Survey of Montreal Facilities," Canadian Journal of Mental Hygiene, III (April, 1921).

"Survey of Nova Scotia Facilities," Canadian Journal of Mental Hygiene, III (April, 1921).

Tait, W.A. "The Gifted Child," Canadian Journal of Mental Hygiene, III, 3 (1921), 265-273.

"Technology in Guidance," The Personnel and Guidance Journal, XLIX (November, 1970), 170-264.

Truax, C.B., and J.L. Lister. "The Effects of Counselor Accurate Empathy and Non-Possessive Warmth Upon Client Vocational Rehabilitation Progress," Canadian Counsellor, IV (October, 1970), 229-232.

Tyler, R.W. "Critique of the Issue on Educational and Psychological Testing," Review of Educational Research, XXXVIII (February, 1968), 102-107.

Walton, R.D. "Vocational Guidance in the Schools," Journal of Education, (January, 1938), 47-50.

White, W.A. "Childhood: The Golden Period of Mental Hygiene," Canadian Journal of Mental Hygiene, II, 2 (July, 1920), 144-152.

Willis, C.B. "The Grading and Promotion of Children," Canadian Journal of Mental Hygiene, III, 4 (January, 1922), 291-296.

C. GOVERNMENT REPORTS

Alberta. Department of Education. Annual Report: 1969. Edmonton: Queen's Printer, 1970.

British Columbia. Department of Education. Annual Report: 1935-36. Victoria: King's Printer, 1936.

_____. Department of Education. Annual Report: 1944-45. Victoria: King's Printer, 1946.

Manitoba. Department of Education. Annual Report for the Year Ending June 30, 1936. Winnipeg: King's Printer, 1936.

_____. Department of Education. Annual Report for the Year Ending June 30, 1963. Winnipeg: Queen's Printer, 1963.

_____. Department of Education. Annual Report for the Year Ending June 30, 1967. Winnipeg: Queen's Printer, 1967.

Nova Scotia. Department of Education. Annual Report for the Year Ended July 31, 1946. Halifax: King's Printer, 1947.

_____. Department of Education. Annual Report for the Year Ended July 31, 1957. Halifax: Queen's Printer, 1958.

_____. Department of Education. Annual Report for the Year Ended July 31, 1958. Halifax: Queen's Printer, 1959.

_____. Department of Education. Annual Report for the Year Ended July 31, 1969. Halifax: Queen's Printer, 1969.

Ontario. Department of Education. Report of the Minister: 1960. Toronto: Queen's Printer, 1960.

_____. Department of Education. Report of the Minister: 1964. Toronto: Queen's Printer, 1964.

D. UNPUBLISHED WORKS

Aldridge, A.A. "Guidance in Alberta High Schools." Unpublished paper, Alberta Department of Education, 1956.

_____. "A Review of Guidance in Alberta: 1947-1963." Unpublished paper, Alberta Department of Education, 1963.

Jackson, H.J. "Vocational Guidance." Unpublished Master's thesis, McMaster University, 1934.

Lazerte, M.E., and others. "Educational Survey of the Schools at Lamont." Unpublished study, University of Alberta, 1934.

_____. "Survey of the Schools at Fort Saskatchewan." Unpublished study, University of Alberta, 1931.

Webster, E.C. "An Experimental Approach to Vocational Guidance." Unpublished Master's thesis, University of McGill, 1933.

APPENDICES

A. TESTS USED IN THE PUTMAN-WEIR SURVEY

A. List and Order of Tests for High Schools and Normal Schools.

B.C. Test in General Intelligence

B.C. Test in Geography

B.C. Test in History

*Ruch-Popenoe Test in General Science

*Hotz Algebra Test

*Henmon Latin Tests

*Henmon French Test

B. List and Order of Tests for Elementary Schools.

*Pintner-Cunningham Primary Mental Test

*National Intelligence Test

B.C. Spelling Test

*Ayres Burgess Silent Reading

*Thorndike-McCall Reading Scale

*Woody-McCall Mixed Fundamentals in Arithmetic

B.C. Test in Fundamentals of Arithmetic

B.C. Test in Geography

B.C. Test in History

*American tests unaltered for use in the survey.

B. REPORT ON INDIVIDUAL PUPILS - M.E. LAZERTE

A. CASE I: Gwyneth Roberts - Aged 20-7

I.Q. (Otis S.A.) 76

Academic: Past performance - Grade VIII repeated; one year retarded in High School achievement for the three years spent in it.

Personality: Normal, serious in tastes, apparently well-adjusted socially.

Interests: Nursing and Dress-work.

Miss Roberts does not appear to have the ability necessary for meeting the academic prerequisites of Nursing. Her I.Q. is so low as to make it remarkable that she has reached High School at all. Her performance in the coming Departmental Examinations should be accepted as determining definitely whether she continues High School or not; and every possible action towards making her studies effective in the meantime should be carefully taken. (She complains of the distraction of the radio during her homestudy time. This should be remedied.)

If Miss Roberts fails to finish at least five courses this year, she should be discouraged from her nursing plans and urged to find employment in dressmaking, millinery, or drygoods store. She has some inclination towards stenography, but this occupation is becoming decidedly overcrowded, and the duller girls (of whom she would be one) are unemployed by the score.

B. CASE II: William Gauf - Aged 16-4

I.Q. (Average of three tests) 81

Academic: Retarded about two years by grade, and is about two years below his grade in quality of work.

Interests: Radio - he is taking a correspondence course in this work.

There seems to be nothing gained by keeping this boy at school if he can be successfully placed in a trade or business. His only prospect is repetition of Grade VIII, for which he is not adequately grounded anyway. If by any chance he should pass his Departmentals, he would be quite out of his depth in the Grade IX work.

On a good mechanical test he scored well, which indicates that his selection of Radio for home study may be a wise one. On the other hand,

his I.Q. leaves it doubtful whether he can profit by a close theoretical study along that line, or become more than a good installing salesman. In view of his poor efficiency as a reader and his admitted slackness in home study, it seems likely that his Chicago course will prove a fiasco. If his father has money to spend upon such ventures, it might be better for him to send the boy to a place where he can get personal practical instruction in Radio and numerous other mechanical subjects, namely the Calgary Institute of Technology. A winter down there would cost not very much more than the Correspondence course he is taking now, and it would test his special ability (if he has any) far more efficiently; besides giving him a chance to look out on the general field of mechanical vocations.

C. PUBLISHERS OF TESTS - JACKSON THESIS

Although new-type tests have been printed literally in millions, the most dependable and most used are published by a small group of publishers, whose catalogs give fairly good descriptions of the types mentioned above. Sample copies of most tests may be obtained by teachers for from ten to fifty cents. Following are the chief publishers.

i) World Book Co., Yonkers-on-Hudson, New York.

ii) Public School Publishing Co., Bloomington, Illinois.

iii) Bureau of Publications, Teachers' College, Columbia University.

iv) C.H. Stoelting Co., Chicago, Illinois.

v) J.B. Lippincott Co., New York.